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TECHNICAL NOTE

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SOLUTIONS OF THE LAMINAR COMPRESSIBLE BOUNDARY-LAYER
EQUATIONS WITH TRANSPERSION WHICH ARE
APPLICABLE TO THE STAGNATION REGIONS
OF AXISYMMETRIC ELIUNT BODIES

By John T. Howe and William A. Mersman

Ames Research Center
Moffett Field, Calif.



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TECHNICAL NOTE D-12

SOLUTIONS OF THE LAMINAR COMPRESSIBLE BOUNDARY-LAYER
EQUATIONS WITH TRANSPERSION WHICH ARE
APPLICABLE TO THE STAGNATION REGIONS
OF AXISYMMETRIC BLUNT BODIES

By John T. Howe and William A. Mersman

SUMMARY

Solutions of the laminar compressible boundary-layer equations ~~in the Brown and Donough form~~ are obtained for Euler number $1/3$ and Prandtl number at the wall equal to 0.7. Fifteen solutions are presented for various wall-temperature levels and transpiration rates. The solutions are applicable to the stagnation region of axisymmetric bodies by means of the Mangler transformation. ↗

INTRODUCTION

A detailed knowledge of velocity and temperature profiles in the stagnation region of blunt axisymmetric bodies having transpiration is of considerable interest. These profiles can be obtained from two-dimensional wedge flow solutions, in which the Euler number is $1/3$, by means of the Mangler transformation. Existing literature presents two-dimensional solutions for Euler numbers smaller and larger than this, but such that interpolation to obtain Euler number $1/3$ solutions is considered to be inaccurate. In order to obtain accurate profiles for this Euler number, the equations of the two-dimensional laminar compressible boundary layer in the Brown, Donough, and Livingood form were integrated numerically. Solutions were obtained for five wall-temperature levels ($T_e/T_w = 0.25, 0.5, 1, 2, \text{ and } 4$), each having three transpiration conditions ($f_w = 0, -0.5, \text{ and } -1.0$).

The purpose of this report is to fill a gap in the existing literature. Therefore, only brief discussions of the theory and method are presented, and the complete numerical results are listed. Transformations to the desired axisymmetric coordinates are given so that local shear stress, heat transfer (as well as their corresponding dimensionless parameters), blowing rates, velocity profiles, and temperature profiles near the stagnation region of a blunt-nosed axisymmetric body can be obtained from the tabulated solutions.

SYMBOLS

a	constant used in equation (18)
c	an arbitrary constant
c_f	local skin-friction coefficient, $\frac{2\tau_w}{\rho_e u_e^2}$
c_p	coefficient of specific heat at constant pressure
Eu	Euler number, $-x \frac{\partial p / \partial x}{\rho_e u_e^2}$
f	dimensionless stream function, $\frac{\rho_w \psi}{\sqrt{\mu_w x u_e \rho_w}}$
h	heat-transfer coefficient, $\frac{q_w}{T_w - T_e}$
k	thermal conductivity
L	an arbitrary reference length
Nu	Nusselt number, $\frac{hx}{k_w}$
P	temperature parameter, $\frac{T}{T_w} = 1 + \theta \frac{T_e - T_w}{T_w}$
Pr	Prandtl number, $\frac{c_p \mu}{k}$
q	heat-transfer rate, $-k \frac{\partial T}{\partial y}$
Re	Reynolds number, $\frac{\rho_w u_e x}{\mu_w}$
T	absolute temperature
u	velocity parallel to the wall
v	velocity normal to the wall
x	distance along wall surface from stagnation point
y	distance normal to wall surface

α	exponent of temperature in specific-heat relationship
ϵ	exponent of temperature in thermal conductivity relationship
η	independent variable in transformed boundary-layer equations, $y\sqrt{\rho_w u_e / \mu_w x}$
θ	temperature variable, $\frac{T - T_w}{T_e - T_w}$
μ	coefficient of viscosity
ρ	density
τ	shear stress, $\mu \frac{du}{dy}$
ω	exponent of temperature in viscosity relationship
ψ	stream function defined by equation (9)

Subscripts

e	local conditions at the outer edge of the boundary layer
w	conditions at the wall

Superscripts

-	axisymmetric conditions
', ", "'	derivatives with respect to η

THEORY

The Differential Equations

The two-dimensional partial differential equations describing the physical behavior of the laminar compressible boundary layer are:

$$\frac{\partial}{\partial x} (\rho u) + \frac{\partial}{\partial y} (\rho v) = 0 \quad (1)$$

$$\rho u \frac{\partial u}{\partial x} + \rho v \frac{\partial u}{\partial y} = \frac{\partial}{\partial y} \left(\mu \frac{\partial u}{\partial y} \right) - \frac{\partial p}{\partial x} \quad (2)$$

$$c_p \left(\rho u \frac{\partial T}{\partial x} + \rho v \frac{\partial T}{\partial y} \right) = \frac{\partial}{\partial y} \left(k \frac{\partial T}{\partial y} \right) + \mu \left(\frac{\partial u}{\partial y} \right)^2 + u \frac{\partial p}{\partial x} \quad (3)$$

These equations comprise statements of conservation of mass, the momentum theorem, and conservation of energy, respectively.

The boundary conditions are

at $y = 0$,

$$u = 0, v = v_w(x), T = T_w \quad (4)$$

and at $y \rightarrow \infty$,

$$T \rightarrow T_e, u \rightarrow u_e \quad (5)$$

The partial differential equations (1), (2), and (3) can be transformed to ordinary differential equations having only one independent variable, η , by use of the following relationships introduced by Blasius (ref. 1, p. 135), von Kármán and Tsien (ref. 2), and Pohlhausen (ref. 1, p. 624), respectively.

$$\eta = y \sqrt{\frac{\rho_w u_e}{\mu_w x}} \quad (6)$$

$$\rho_w \psi = f \sqrt{\mu_w x u_e \rho_w} \quad (7)$$

and

$$\theta = \frac{T - T_w}{T_e - T_w} \quad (8)$$

The stream function, ψ , in equation (7) is defined so that the continuity equation (1) is automatically satisfied; that is,

$$\left. \begin{aligned} \rho u &= \frac{\partial(\rho_w \psi)}{\partial y} \\ \rho v &= - \frac{\partial(\rho_w \psi)}{\partial x} \end{aligned} \right\} \quad (9)$$

and

After certain assumptions and restrictions which will be presented in the next section have been imposed, the two-dimensional partial differential equations, transformed to ordinary differential equations in the manner of Brown, Donoughe, and Livingood (refs. 3, 4, and 5), become

$$f''' = \frac{1}{P^2} \left[E u f'^2 - \left(\frac{E u + 1}{2} \right) f f'' - \frac{E u}{P} \frac{T_w}{T_e} \right] - \frac{1}{P} \left(\frac{T_e}{T_w} - 1 \right) \left[\left(\frac{E u + 1}{2} \right) \frac{f f' \theta'}{P^2} + f' \theta'' + (\omega + 2) \theta' f'' + \left(\frac{T_e}{T_w} - 1 \right) \frac{\omega \theta'^2 f'}{P} \right] \quad (10)$$

and

$$\theta'' = - \left[\left(\frac{E u + 1}{2} \right) \text{Pr}_w f \theta' P^{(\alpha - \epsilon)} + \left(\frac{T_e}{T_w} - 1 \right) \frac{\epsilon \theta'^2}{P} \right] \quad (11)$$

The complete derivation of the equations can be found in reference 3.

The boundary conditions for equations (10) and (11) are as follows:

at $\eta = 0$,

$$f' = 0 \quad (12)$$

$$f = f_w \text{ (required to be constant for similarity)} \quad (13)$$

$$\theta = 0 \quad (14)$$

at $\eta \rightarrow \infty$

$$\theta \rightarrow 1 \quad (15)$$

$$f' \rightarrow \frac{T_w}{T_e} \quad (16)$$

Boundary condition (12) is easily derived by means of the first of boundary conditions (4), the relationship being shown by equation (23). Boundary condition (13) is similarly derived by means of the second of boundary conditions (4), the relationship being shown by equation (25). It is seen from equation (25) that f_w is a measure of the transpiration rate. Negative values of f_w correspond to blowing or transpiration. Boundary conditions (14) and (15) are obvious, and (16) is derived by means of the last of boundary conditions (5), the relationships being given by equations (23) and (15).

Assumptions and Restrictions

The derivation of equations (10) and (11) included certain simplifying assumptions (ref. 3). These will be listed and then discussed in turn.

1. The local Mach number at the outer edge of the boundary layer is small.
2. The Euler number is constant.
3. The wall temperature is constant.
4. Local fluid properties within the boundary layer are proportional to some power of the absolute temperature.

The first assumption makes it possible to omit the dissipative terms (the last two terms in eq. (3)) in the energy equation (see p. 13, ref. 6) because these terms are proportional to Mach number squared. For this same reason, T_e and ρ_w are considered to be constant.

The second assumption permits integration of the Euler equation

$$-\frac{\partial p}{\partial x} = \rho_e u_e \frac{du_e}{dx} \quad (17)$$

resulting in

$$u_e = ax^{Eu} \quad (18)$$

Equation (18) and therefore the two-dimensional solutions reported here are of the wedge flow type (ref. 7, p. 128).

A combination of the first and third assumptions allows T_e/T_w to be treated as a constant in equations (10) and (11).

Although assumption number 4 states a proportional relationship of properties to some power of the absolute temperature, the constants of proportionality never have to be specified. The exponents, however, must be specified in order to integrate the differential equations. The power law relationships are simply

$$\frac{\mu}{\mu_w} = \left(\frac{T}{T_w}\right)^{\omega} \quad (19)$$

$$\frac{k}{k_w} = \left(\frac{T}{T_w}\right)^{\epsilon} \quad (20)$$

$$\frac{c_p}{c_{pw}} = \left(\frac{T}{T_w} \right)^a \quad (?)$$

$$\frac{\rho}{\rho_w} = \left(\frac{T}{T_w} \right)^{-1} \quad (22)$$

The description of the two-dimensional theory is terminated at this point. A detailed discussion can be found in reference 3. Attention is now directed to a brief discussion of the method of solution, which differs somewhat from that of references 3 through 5.

Method of Solution and Specified Numerical Data

Solutions to equations (10) and (11) were obtained by numerical integration using the Adams-Moulton technique (ref. 8, p. 200, eqs. 6.6.2). This is a variable interval method which is especially well suited to this problem. The numerical solutions were computed on the IBM 704 electronic data processing machine.

The boundary conditions (12), (13), and (14) are not sufficient for starting the numerical integration of equations (10) and (11). Values of θ' and f'' are also needed at $\eta = 0$ (i.e., θ_w' and f_w''). These have to be estimated for the first attempt to integrate equations (10) and (11). As $\eta \rightarrow \infty$, the integration should yield the outer edge boundary conditions (15) and (16). Failure to produce and maintain these values indicates that the estimates for θ_w' and f_w'' were in error and new estimates must be made.

In order to facilitate selection of the correct θ_w' and f_w'' , three initial trial integrations of a given example were made as follows: the first trial used estimates of θ_w' and f_w'' . In the second integration, only θ_w' was changed from the first estimate, and in the third integration only f_w'' was changed from the first estimate. The results of these three trial runs yielded values for the partial derivatives of θ and f at $\eta = \infty$ with respect to f_w'' and θ_w' . Linear interpolation then yielded revised estimates of the starting values, f_w'' and θ_w' . The process was then repeated until the correct initial values were obtained thus achieving the proper boundary conditions at $\eta \rightarrow \infty$.

Numerical data used for integrating equations (10) and (11) are

$$Pr_w = 0.70$$

$$\omega = 0.70$$

$$\epsilon = 0.85$$

$$\alpha = 0.19$$

These numbers are applicable to air in the temperature range 1060° R to 2860° R according to reference 3. All examples were computed for Euler number 1/3 for reasons which will be presented in the section "Physical Relationships for Axisymmetric Stagnation Regions." Examples were solved for five wall-temperature levels (T_e/T_w equal to 0.25, 0.5, 1, 2, and 4), each at three different transpiration conditions ($f_w = 0$, -0.5, and -1.0).

The numerical results of the integrations appear in tables I through XV. Velocity, temperature, and mass-flow profiles appear in figures 1 through 9. Heat-transfer and skin-friction parameter curves are shown in figures 10 and 11.

Physical Relationships for Two-Dimensional Wedge Flows

The following relationships are useful in obtaining values for the physical quantities of interest from the tabulated results. Note that the left-hand sides of both equations (23) and (24) are tabulated in tables I through XV.

$$\frac{u}{u_e} = f' \left[1 + \left(\frac{T_e}{T_w} - 1 \right) \theta \right] \quad (\text{ref. 4}) \quad (23)$$

$$\frac{\rho u}{\rho_e u_e} = f' \frac{T_e}{T_w} \quad (\text{ref. 4}) \quad (24)$$

$$(\rho v)_w = - \left(\frac{Eu + 1}{2} \right) f_w \sqrt{\frac{\rho_e \mu_v u_e}{x}} \quad (\text{ref. 3}) \quad (25)$$

$$\tau = \mu \frac{\partial u}{\partial y} = \mu_v u_e \sqrt{\frac{\rho_v u_e}{\mu_v x}} \left[1 + \left(\frac{T_e}{T_w} - 1 \right) \theta \right]^2 \left\{ \left(\frac{T_e}{T_w} - 1 \right) f' \theta' + \left[\left(\frac{T_e}{T_w} - 1 \right) \theta + 1 \right] f'' \right\} \quad (26)$$

$$\tau_w = u_e f_w'' \sqrt{\frac{\rho_v \mu_v u_e}{x}} = \frac{c_f \rho u_e^2}{2} \quad (27)$$

$$c_f \frac{T_w}{T_e} \sqrt{\frac{\rho_e}{\rho_v}} = 2 f_w'' \quad (\text{ref. 4}) \quad (28)$$

$$q_w = -k_v \left(\frac{\partial T}{\partial y} \right)_w = -k_v (T_e - T_w) \theta_w' \sqrt{\frac{\rho_v u_e}{\mu_v x}} \quad (29)$$

$$\frac{Nu}{\sqrt{Re}} = \theta_w' \quad (\text{ref. 4}) \quad (30)$$

It can be seen from equation (25) that because f_w is specified constant, v_w is required to vary as $x^{(Eu-1)/2}$.

These two-dimensional relationships (eqs. (23) through (30)) applied to the tabulated solutions for $Eu = 1/3$ (tables I through XV) correspond to the two-dimensional flow over a wedge.

Physical Relationships for Axisymmetric Stagnation Regions

Relationships resulting from the Mangler transformation will now be presented (ref. 7, pp. 129 and 168) which make these wedge flow solutions applicable to the stagnation regions of blunt axisymmetric bodies. This transformation is a stretching of the x and y coordinates so that the pressure, enthalpy, density, viscosity, and velocity parallel to the surface at the point x, y in the wedge flow are the same as those at \bar{x}, \bar{y} in the axisymmetric flow. In the following equations, quantities which apply only to the axisymmetric flow are designated with a bar. Those which apply to the wedge flow (as well as those mentioned above which apply to either flow) are written without a bar. The relationships derived by the Mangler transformation are as follows:

$$\bar{x} = \left(\frac{3L^2 x}{c^2} \right)^{1/3} \quad (31)$$

$$\bar{y} = \frac{L}{cx} y \quad (32)$$

$$\bar{\eta} = \frac{1}{\sqrt{3}} \eta \quad (33)$$

$$\bar{Eu} = 3Eu \quad (34)$$

$$\bar{q}_w(\bar{x}) = \frac{2\bar{x}}{L} q_w(x) = -\sqrt{3} k_w (T_e - T_w) \theta_w' \sqrt{\frac{\rho_w u_e}{\mu_w x}} \quad (35)$$

$$\bar{\tau}(\bar{x}, \bar{y}) = \frac{cx}{L} \tau(x, y) = \sqrt{3} \mu_w u_e \sqrt{\frac{\rho_w u_e}{\mu_w x}} \left[1 + \left(\frac{T_e}{T_w} - 1 \right) \theta \right]^\theta \left\{ \left[\left(\frac{T_e}{T_w} - 1 \right) r' \theta' + \left[\left(\frac{T_e}{T_w} - 1 \right) \theta + 1 \right] r'' \right] \right\} \quad (36)$$

$$c_f \frac{T_w}{T_e} \sqrt{Re} = \sqrt{3} c_f \frac{T_w}{T_e} \sqrt{Re} = 2\sqrt{3} f_w'' \quad (37)$$

$$\frac{\overline{Nu}}{\sqrt{Re}} = \sqrt{3} \frac{Nu}{\sqrt{Re}} = \sqrt{3} \theta_w' \quad (38)$$

$$(\rho v)_w = \frac{c_x}{L} (\rho v)_w = -\sqrt{3} \left(\frac{Eu + 3}{6} \right) f_w \sqrt{\frac{\rho_w u e^{Eu}}{x}} \quad (39)$$

$$\frac{\bar{v}_w}{u_e} \sqrt{Re} = - \frac{2f_w}{\sqrt{3}} \quad (40)$$

Because the local Mach number exterior to the boundary layer is assumed to be small, the local exterior flow is considered to be almost incompressible. For the incompressible inviscid flow in the axisymmetric stagnation region, the velocity exterior to the boundary layer is a linear function of x (ref. 7, p. 74, eq. (5.35)); that is, the axisymmetric Euler number (Eu) is unity in equations (34) and (39). This linear velocity for the axisymmetric stagnation region has also been observed experimentally over a wide range of free-stream Mach numbers. Equation (39) shows that the axisymmetric transpiration velocity, \bar{v}_w , is constant because u_e is proportional to x .

The two-dimensional Euler number (Eu) is $1/3$ corresponding to \overline{Eu} of unity according to equation (34). All of the numerical solutions of equations (10) and (11) presented in this report are for Eu of $1/3$ and can be used for the axisymmetric stagnation region. Application of equations (31) through (40) to the solutions in tables I through XV will yield the desired axisymmetric blunt body stagnation region values. Profiles of velocity, mass flow, and temperature for the axisymmetric stagnation region are shown in figures 1 through 9 by using the appropriate ordinate. Heat-transfer and skin-friction parameter curves are presented in figures 10 and 11.

DISCUSSION

Some features of the solution and numerical results warrant mention.

The cases $T_e/T_w = 1$ are somewhat special. The physical definition of θ (eq. (8)) reveals that either θ is infinite or indeterminate for these examples. However, the solutions for θ turn out to be finite, as is shown in figures 7, 8, and 9, and listed in tables IV, V, and VI. Therefore θ , as defined physically, is actually indeterminate, that is, the temperature, T , is constant and is equal to T_e (and T_w) across the boundary layer. However, θ is defined mathematically by the differential

equation (11) and the boundary conditions (14) and (15), but in this case it has no physical meaning. For this degenerate situation, the second set of brackets in equation (10) is dropped, P is unity, and the equation reduces to the familiar Falkner and Skan equation (ref. 1, p. 140) for constant property wedge flow conditions.

Examination of figures 1 through 3 and tables I through VI shows a velocity overshoot condition for hot wall cases; that is, the velocity within the boundary layer exceeds that at the outer edge of the boundary layer. This results from the greater acceleration of the less dense hot gas in the boundary layer by a given (favorable) pressure gradient. It is seen that the amount of overshoot increases with increasing wall temperature or blowing rate. References 4 and 5 show that the amount of overshoot increases with Euler number. The two-dimensional flow at $Eu = 1/3$ passes through the same values of u/u_e as the axisymmetric flow at $Eu = 1$. Then it can be said that for a two-dimensional flow and an axisymmetric flow, both having Euler number unity, the magnitude of the velocity overshoot is smaller in the axisymmetric flow than it is in the two-dimensional flow.

It is interesting to note in figures 4 through 6 and tables X through XV that an overshoot in mass flow occurs. Because of the increased density near a cold wall, this mass-flow overshoot is increased as the wall-temperature level is decreased, in contrast with the behavior of the velocity overshoot condition. However, the amount of mass-flow overshoot increases with blowing rate as was the case with the velocity overshoot condition.

Figure 10 shows that for a given wall-temperature level, transpiration reduces the heat transferred to the wall to a remarkable extent. In particular, for T_e/T_w equal to 4, the heat-transfer parameter corresponding to transpiration parameter 0.667 is only about one fifth of its value for no transpiration. It is seen that the effectiveness of transpiration in reducing the heat-transfer parameter increases with the transpiration rate and with T_e/T_w .

As would be expected, figure 11 shows a similar effect of transpiration on skin friction. Quantitatively, for T_e/T_w equal to 4, the skin-friction parameter corresponding to transpiration parameter 0.667 is only about one third of its value for no transpiration.

SUMMARY OF RESULTS

The Brown, Donough, and Livingood forms of the laminar compressible boundary-layer equations have been integrated numerically on the IBM 704 electronic data processing machine. Fifteen solutions were obtained for Euler number 1/3, wall Prandtl number 0.7, and for five ratios of local free-stream temperature to wall temperature each at three different

transpiration conditions. These are T_e/T_w values of 0.25, 0.5, 1, 2, and 4, and transpiration rates corresponding to f_w of 0, -0.5, and -1.0. The solutions are presented in the forms of tables and graphs.

Relationships are presented by which the tabulated solutions can be applied to stagnation regions of axisymmetric blunt bodies.

The results indicate velocities in the boundary layer greater than the local exterior velocity for hot wall flow situations. The results also indicate local mass flows greater in the boundary layer than exterior to it for cold wall situations. These "overshoot" conditions are accentuated by increased transpiration for both the velocity profiles and the mass-flow profiles.

A large reduction of skin friction and heat transfer is achieved by transpiration. The reduction is greater for situations in which the walls are colder than the local exterior flow.

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National Aeronautics and Space Administration
Moffett Field, Calif., Mar. 20, 1959

REFERENCES

1. Goldstein, S.: *Modern Developments in Fluid Dynamics*. Oxford, The Clarendon Press, 1938.
2. von Kármán, Th., and Tsien, H. S.: *Boundary Layer in Compressible Fluids*. *Jour. Aero. Sci.*, vol. 5, no. 6, April 1938, pp. 227-232.
3. Brown, W. Byron: *Exact Solutions of the Laminar Boundary Layer Equations for a Porous Plate With Variable Fluid Properties and a Pressure Gradient in the Main Stream*. *Proc. First U. S. Natl. Cong. Appl. Mech.*, 1952, pp. 843-852.
4. Brown, W. Byron, and Donoughue, Patrick L.: *Tables of Exact Laminar-Boundary-Layer Solutions When the Wall is Porous and Fluid Properties are Variable*. *NACA TM 2479*, 1951.
5. Brown, W. Byron, and Livingood, John W. B.: *Solutions of Laminar-Boundary-Layer Equations Which Result in Specific-Weight-Flow Profiles Locally Exceeding Free-Stream Values*. *NACA TM 2800*, 1952.

6. Baxter, Donald C., and Flügge-Lotz, Irmgard: The Solution of Compressible Laminar Boundary Layer Problems by a Finite Difference Method. Part 2 - Further Discussion of the Method and Computation of Examples. Tech. Rep. No. 110, Div. of Engineering Mechanics, Stanford Univ., Oct. 1957. (Also Off. of Sci. Res. TN 58-1)
7. Schlichting, H.: Boundary Layer Theory. McGraw-Hill Book Co., 1955.
8. Hildebrand, F. B.: Introduction to Numerical Analysis. McGraw-Hill Book Co., 1956.

TABLE I.- $T_e/T_w = 0.25$, $r_w = 0$, $\text{Eu} = 1/3$

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	fu/pe_e
0.000	0.00000	1.0556297	0.045950	0.00000	0.437659	0.122110	0.00000	0.00000	0.00000
0.005	0.00002	1.0556529	0.046752	0.002190	0.438271	0.122649	0.00777	0.01195	0.00195
0.010	0.00008	1.055655	0.047564	0.004383	0.438855	0.123185	0.01551	0.0389	0.00389
0.015	0.00018	1.0557004	0.048387	0.006579	0.439503	0.123716	0.02323	0.0584	0.00584
0.020	0.00031	1.0557248	0.049220	0.008778	0.440123	0.124243	0.03093	0.0778	0.00778
0.025	0.00049	1.0557497	0.050063	0.010980	0.440745	0.124766	0.03850	0.0973	0.00973
0.030	0.00070	1.0557749	0.050917	0.013185	0.441370	0.125285	0.04625	0.0168	0.0168
0.040	0.00125	1.0558267	0.052656	0.017605	0.442628	0.126311	0.06147	0.0557	0.01557
0.050	0.00195	1.0558802	0.054438	0.022038	0.443896	0.127319	0.07659	0.01947	0.01947
0.060	0.00280	1.0559356	0.056264	0.026483	0.445175	0.128310	0.09161	0.02337	0.02337
0.070	0.00382	1.0559928	0.058133	0.030941	0.446463	0.129284	0.10653	0.02727	0.02727
0.080	0.00498	1.0560519	0.060048	0.035412	0.447760	0.130239	0.12135	0.03117	0.03117
0.090	0.00631	1.0561129	0.062009	0.039897	0.449067	0.131176	0.13608	0.03507	0.03507
0.110	0.00943	1.0562409	0.066070	0.048904	0.451709	0.132992	0.16522	0.04288	0.04288
0.130	0.01317	1.0563773	0.070324	0.057965	0.454386	0.134729	0.19396	0.05069	0.05069
0.150	0.01754	1.0565224	0.074776	0.067080	0.457098	0.136384	0.22228	0.05852	0.05852
0.170	0.02253	1.0566765	0.079433	0.076249	0.459841	0.137952	0.25020	0.06634	0.06634
0.190	0.02815	1.0568402	0.084302	0.085474	0.462615	0.139429	0.27771	0.07418	0.07418
0.210	0.03440	1.0570139	0.089391	0.094754	0.465418	0.140811	0.30490	0.08203	0.08203
0.250	0.04878	1.0573929	0.100258	0.113484	0.471101	0.143273	0.35772	0.09775	0.09775
0.290	0.06368	1.0576173	0.112098	0.132443	0.476874	0.145299	0.40894	0.11351	0.11351
0.330	0.08511	1.0517257	1.0582911	0.124980	0.151635	0.482718	0.146848	0.45843	0.12931
0.370	0.10707	1.0580677	1.0588186	0.138979	0.171062	0.488615	0.147871	0.50618	0.14517
0.410	0.13157	1.0644319	1.0594045	0.154172	0.190725	0.494512	0.148319	0.55215	0.16108
0.450	0.15862	1.0708209	1.0600537	0.170645	0.210625	0.500472	0.148135	0.59633	0.17705
0.530	0.22041	1.0836836	1.0615635	0.207783	0.251135	0.512242	0.145624	0.67922	0.20921
0.610	0.29254	1.0966796	1.0633948	0.251126	0.292575	0.523683	0.139785	0.75465	0.24170
0.690	0.37514	1.0983659	1.0656000	0.301398	0.334907	0.534502	0.129966	0.82248	0.27459
0.770	0.46834	1.0231872	1.0682373	0.359209	0.378069	0.544351	0.115407	0.88257	0.30797
0.850	0.57230	1.0367679	1.0713683	0.424851	0.421967	0.552817	0.095238	0.93484	0.34192
0.930	0.68724	1.0506210	1.0750547	0.497938	0.466470	0.559413	0.068482	0.97926	0.37655
0.930	0.68724	1.0506210	1.0750547	0.497938	0.466470	0.559413	0.068482	0.97926	0.37655
0.970	0.74889	1.0576641	1.0771238	0.536032	0.488897	0.561836	0.052303	0.99853	0.39416
1.010	0.81338	1.0647930	1.0793509	0.576824	0.511408	0.563570	0.034073	1.01586	0.41198
1.050	0.88074	1.0720143	1.0817392	0.617353	0.533973	0.564532	0.013655	1.03126	0.43004
1.090	0.95100	1.0793343	1.0842894	0.657637	0.556559	0.564632	-0.009085	1.04477	0.44834

TABLE I.- $T_e/T_w = 0.25$, $f_w = 0$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	θ	θ'	θ''	η/η_e	μ/μ_{ref}
1.030	1.02422	1.0867596	1.0869985	0.966608	0.579130	0.563773	-0.034272	1.005641	0.46690
1.0370	1.01043	1.0942962	1.0998585	0.732851	0.601647	0.561856	-0.062016	1.006623	0.48574
1.0410	1.017967	2.019501	1.9208551	0.764523	0.624063	0.558776	-0.092402	1.007428	0.50488
1.04250	1.026200	2.097261	1.0959654	0.789272	0.646332	0.554428	-0.125479	1.008062	0.52432
1.04290	1.034747	2.176284	1.0991561	0.804163	0.668399	0.548702	-0.161250	1.008531	0.54407
1.04330	1.043612	2.256591	2.023807	0.805601	0.690208	0.541493	-0.199653	1.008845	0.56415
1.04370	1.052801	2.338185	2.055771	0.789298	0.711697	0.532697	-0.240540	1.009012	0.58455
1.04410	1.062319	2.421038	2.086646	0.750282	0.732801	0.522220	-0.283661	1.009043	0.60526
1.04450	1.072171	2.505088	2.0115415	0.682995	0.753451	0.509979	-0.320637	1.008949	0.62627
1.04490	1.082362	2.590226	2.040829	0.581502	0.773575	0.495912	-0.374937	1.008742	0.64756
1.04530	1.092894	2.676290	2.0161400	0.439870	0.793099	0.479976	-0.421961	1.008437	0.66907
1.04570	2.03773	2.763050	2.0175412	0.252734	0.811948	0.462166	-0.468522	1.008046	0.69076
1.04610	2.14999	2.850209	2.0180959	0.016070	0.830048	0.442513	-0.513046	1.007585	0.71255
1.04650	2.14999	2.850209	2.0180959	0.016070	0.830048	0.442513	-0.513046	1.007585	0.71255
1.04690	2.20743	2.893822	2.0179926	-0.121494	0.838794	0.432017	-0.535622	1.007333	0.72346
1.04730	2.26575	2.937387	2.0176014	-0.271852	0.847326	0.421093	-0.556583	1.007069	0.73435
1.04770	2.32493	2.980842	2.0168969	-0.434691	0.855635	0.409760	-0.576553	1.006796	0.74521
1.04810	2.38498	3.024123	2.0158547	-0.609425	0.863714	0.398039	-0.595349	1.006514	0.75603
1.04850	2.44589	3.067160	2.0144519	-0.795171	0.871554	0.385955	-0.612786	1.006226	0.76679
1.04890	2.50764	3.109878	2.0126675	-0.990731	0.879150	0.373538	-0.628680	1.005934	0.77747
1.04930	2.57028	3.152200	2.0104835	-1.194578	0.886494	0.360820	-0.642852	1.005640	0.78605
1.04970	2.63375	3.194044	2.0078850	-1.404864	0.893581	0.347837	-0.655130	1.005344	0.79851
1.05010	2.69804	3.235324	2.0048612	-1.619426	0.900406	0.334628	-0.665353	1.005050	0.80883
1.05050	2.76316	3.279960	2.0014061	-1.835821	0.906965	0.321237	-0.673378	1.004757	0.81899
1.05090	2.82904	3.315859	1.975185	-2.051364	0.913254	0.307709	-0.679079	1.004669	0.82896
1.05130	2.89576	3.354939	1.9932031	-2.263190	0.919272	0.294090	-0.682357	1.004186	0.83873
1.05170	2.96327	3.393113	1.884702	-2.468319	0.925018	0.280431	-0.683138	1.003910	0.84828
1.05210	3.03150	3.430300	1.8933363	-2.663742	0.930490	0.266781	-0.681379	1.003641	0.85758
1.05250	3.10047	3.466422	1.778237	-2.846507	0.935689	0.253193	-0.677069	1.003380	0.866661
1.05290	3.17015	3.501409	1.719606	-3.013811	0.940618	0.239715	-0.670230	1.003129	0.87535
1.05330	3.24052	3.535182	1.6557805	-3.163094	0.945279	0.226400	-0.660920	1.002888	0.88380
1.05370	3.31155	3.567700	1.593217	-3.292121	0.949676	0.213295	-0.649229	1.002658	0.89192
1.05410	3.38322	3.598890	1.526267	-3.399053	0.953812	0.200446	-0.635280	1.002439	0.89972
2.010	3.45550	3.628738	1.457411	-3.482513	0.957695	0.187897	-0.619227	1.00232	0.90718
2.030	3.52836	3.657182	1.387128	-3.541615	0.961331	0.175690	-0.601248	1.002036	0.91430
2.050	3.60178	3.684217	1.315910	-3.575993	0.964725	0.163859	-0.581543	1.001852	0.92105

TABLE I.- $T_e/T_w = 0.25$, $f_w = 0$, $B_u = 1/3$ - Continued

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	u/u_e	$\mu_e/\rho_e u_e$
2.070	3.67572	3.709819	1.0244251	-3.585794	9.67888	0.152438	-0.560333	1.01680	.92745	
2.090	3.675016	3.733987	1.0172637	-3.571661	0.970626	0.141454	-0.537849	1.01520	.93350	
2.110	3.682507	3.756728	1.0101537	-3.534685	0.973549	0.130931	-0.514329	1.01371	.93918	
2.130	3.690042	3.778055	1.0031392	-3.476357	0.976066	0.120886	-0.490014	1.01233	.94451	
2.150	3.697618	3.797993	0.962612	-3.398501	0.978388	0.111334	-0.465143	1.01106	.94950	
2.170	4.005233	3.816571	0.895568	-3.303196	0.980523	0.102283	-0.439948	1.00989	.95414	
2.190	4.012884	3.833829	0.830585	-3.192701	0.982482	0.093737	-0.414649	1.00883	.95846	
2.210	4.020567	3.849810	0.767945	-3.069381	0.984276	0.085696	-0.389451	1.00785	.96245	
2.230	4.028282	3.864564	0.707879	-2.935635	0.985914	0.078157	-0.364543	1.00697	.96614	
2.250	4.036025	3.878144	0.650573	-2.793829	0.987405	0.071111	-0.340096	1.00617	.96954	
2.270	4.043794	3.890606	0.596165	-2.646244	0.988761	0.064549	-0.316258	1.00545	.97265	
2.290	4.051587	3.902010	0.544748	-2.495025	0.989990	0.058456	-0.293158	1.00480	.97550	
2.310	4.059401	3.912416	0.496375	-2.342152	0.991102	0.052817	-0.270903	1.00421	.97810	
2.330	4.067236	3.921886	0.451061	-2.189412	0.992106	0.047614	-0.249579	1.00369	.98047	
2.350	4.075088	3.930479	0.408787	-2.038380	0.993010	0.042827	-0.229255	1.00323	.98262	
2.370	4.082957	3.938257	0.369506	-1.890419	0.993822	0.038437	-0.209977	1.00281	.98456	
2.390	4.090841	3.945279	0.333143	-1.746677	0.994550	0.034421	-0.191779	1.00245	.98632	
2.410	4.098738	3.951602	0.299605	-1.608091	0.995201	0.030758	-0.174674	1.00212	.98790	
2.430	5.006647	3.957281	0.268780	-1.475406	0.995782	0.027427	-0.158667	1.00184	.98932	
2.450	5.014566	3.952370	0.240546	-1.349178	0.996300	0.024404	-0.143746	1.00159	.99059	
2.470	5.022496	3.966919	0.214768	-1.229802	0.996760	0.021670	-0.129892	1.00137	.99173	
2.490	5.030434	3.970976	0.191307	-1.117524	0.997169	0.019202	-0.117076	1.00118	.99274	
2.510	5.038379	3.974586	0.170019	-1.012459	0.997530	0.016980	-0.105263	1.00101	.99365	
2.530	5.046332	3.977790	0.150760	-0.914613	0.997849	0.014985	-0.094411	1.00086	.99445	
2.550	5.054290	3.980629	0.133387	-0.823898	0.998131	0.013197	-0.084475	1.00074	.99516	
2.570	5.062254	3.983137	0.117758	-0.740152	0.998379	0.011600	-0.075406	1.00063	.99578	
2.590	5.070223	3.985350	0.103736	-0.663145	0.998596	0.010176	-0.067155	1.00053	.99634	
2.610	5.078195	3.987297	0.091189	-0.592606	0.998787	0.008909	-0.059669	1.00045	.99682	
2.630	5.086172	3.989006	0.079991	-0.528224	0.998953	0.007784	-0.052899	1.00038	.99725	
2.650	5.094151	3.990505	0.070021	-0.469666	0.999099	0.006788	-0.046792	1.00032	.99763	
2.670	6.02134	3.991815	0.061168	-0.416580	0.999226	0.005908	-0.041299	1.00027	.99795	
2.690	6.010118	3.992948	0.053324	-0.368609	0.999336	0.005133	-0.036371	1.00023	.99824	
2.710	6.018105	3.993954	0.046392	-0.325393	0.999432	0.004450	-0.031962	1.00019	.99849	
2.730	6.026094	3.994819	0.040279	-0.286576	0.999514	0.003851	-0.028027	1.00016	.99870	
2.770	6.042076	3.996220	0.030182	-0.220767	0.999648	0.002867	-0.021415	1.00011	.99905	
2.810	6.058063	3.997265	0.022438	-0.168555	0.999747	0.002119	-0.016227	1.00007	.99932	

TABLE I.- $T_e/T_w = 0.25$, $f_w = 0$, $Eu = 1/3$ - Concluded

η	f	f'	f''	f'''	θ	θ'	θ''	θ'''	u/u_e	pu/pue
2.850	6.74054	3.998039	0.016549	-0.127566	0.999820	0.001554	-0.012194	1.00005	0.99951	
2.890	6.90047	3.998608	0.012110	-0.095708	0.999873	0.001131	-0.009088	1.00003	0.99965	
2.930	7.06043	3.999023	0.008793	-0.071195	0.999912	0.000817	-0.006718	1.00002	0.99976	
2.970	7.22039	3.999323	0.006336	-0.052513	0.999940	0.000586	-0.004926	1.00001	0.99983	
3.010	7.38037	3.999539	0.004530	-0.038409	0.999960	0.000417	-0.003583	1.00001	0.99988	
3.050	7.54036	3.999693	0.003214	-0.027860	0.999974	0.000294	-0.002585	1.00000	0.99992	
3.090	7.70035	3.999801	0.002264	-0.020041	0.999984	0.000206	-0.001851	1.00000	0.99995	
3.130	7.86034	3.999877	0.001582	-0.014298	0.999991	0.000144	-0.001314	1.00000	0.99997	
3.170	8.02034	3.999931	0.001096	-0.010117	0.999995	0.000099	-0.000926	1.00000	0.99998	
3.210	8.18033	3.999967	0.000757	-0.007100	0.999999	0.000068	-0.000647	1.00000	0.99999	
3.250	8.34033	3.999993	0.000516	-0.004942	1.000001	0.000046	-0.000449	1.00000	1.00000	
3.290	8.50033	4.000010	0.000352	-0.003413	1.000002	0.000031	-0.000309	1.00000	1.00000	
3.330	8.66033	4.000021	0.000238	-0.002338	1.000003	0.000021	-0.000211	1.00000	1.00001	
3.370	8.82034	4.000029	0.000161	-0.001588	1.000004	0.000014	-0.000143	0.99999	1.00001	
3.410	8.98034	4.000035	0.000108	-0.001070	1.000005	0.000009	-0.000096	0.99999	1.00001	
3.450	9.14034	4.000038	0.000073	-0.000715	1.000005	0.000006	-0.000064	0.99999	1.00001	
3.490	9.30034	4.000041	0.000049	-0.000474	1.000005	0.000004	-0.000042	0.99999	1.00001	
3.530	9.46034	4.000042	0.000034	-0.000312	1.000005	0.000003	-0.000028	0.99999	1.00001	
3.570	9.62034	4.000043	0.000023	-0.000203	1.000005	0.000002	-0.000018	1.00000	1.00001	
3.610	9.78034	4.000044	0.000017	-0.000132	1.000005	0.000001	-0.000012	1.00000	1.00001	
3.650	9.94035	4.000045	0.000012	-0.000085	1.000005	0.000001	-0.000007	1.00000	1.00001	
3.690	10.10035	4.000045	0.000010	-0.000053	1.000005	0.000000	-0.000005	1.00000	1.00001	
3.730	10.26035	4.000046	0.000008	-0.000034	1.000005	0.000000	-0.000003	1.00000	1.00001	
3.810	10.38035	4.000046	0.000006	-0.000013	1.000005	0.000000	-0.000001	1.00000	1.00001	
3.890	10.90034	4.000047	0.000006	-0.000005	1.000005	0.000000	-0.000000	1.00000	1.00001	

TABLE II.- $T_e/T_w = 0.25$, $f_w = -0.5$, $E_u = 1/3$

η	f	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	u/u_e
.000	-.50000	.000000	1.369742	-.004999	.000000	.314289	.136305	.000000	.000000	.000000
.005	-.49998	.006849	1.369719	-.004501	.001573	.314972	.136868	.006884	.00171	.00171
.010	-.49993	.013697	1.369697	-.003998	.003150	.315658	.137429	.01366	.00342	.00342
.015	-.49985	.020546	1.369679	-.003489	.004730	.316347	.137990	.02047	.00514	.00514
.020	-.49973	.027394	1.369663	-.002974	.006313	.317038	.138549	.02726	.00685	.00685
.025	-.49957	.034242	1.369649	-.002452	.007900	.317732	.139107	.03404	.00856	.00856
.030	-.49938	.041090	1.369638	-.001925	.009491	.318429	.139663	.04080	.01027	.01027
.040	-.49890	.054787	1.369624	-.000852	.012682	.319831	.140772	.05427	.01370	.01370
.050	-.49829	.068483	1.369621	-.000246	.015887	.321245	.141876	.06767	.01712	.01712
.060	-.49753	.082179	1.369529	-.001369	.019107	.322669	.142974	.08100	.02054	.02054
.070	-.49664	.095876	1.369619	-.002518	.022341	.324104	.144065	.09427	.02397	.02397
.080	-.49562	.109572	1.369620	-.003694	.025589	.325550	.145151	.10747	.02739	.02739
.090	-.49445	.123269	1.369723	-.004895	.028952	.327007	.146230	.12060	.03082	.03082
.110	-.49171	.150665	1.369845	-.007380	.035421	.329953	.148369	.14666	.03767	.03767
.130	-.48843	.178063	1.370019	-.009976	.042050	.332942	.150478	.17245	.04452	.04452
.150	-.48459	.205466	1.370245	-.012687	.048739	.335972	.152557	.19796	.05137	.05137
.170	-.48021	.238874	1.370327	-.015517	.055489	.339044	.154604	.22318	.05822	.05822
.190	-.47528	.265287	1.370866	-.018470	.062301	.342156	.156614	.24813	.06507	.06507
.210	-.46980	.287709	1.371266	-.021549	.069176	.345308	.158587	.27278	.07193	.07193
.250	-.45719	.342578	1.372258	-.028108	.083116	.351728	.162410	.32122	.08564	.08564
.290	-.44239	.397493	1.373523	-.035231	.097316	.358298	.166049	.36848	.09937	.09937
.330	-.42539	.452464	1.375084	-.042957	.111782	.365010	.169479	.41453	.11312	.11312
.370	-.40619	.507504	1.376968	-.051333	.126519	.371853	.172673	.45935	.12688	.12688
.410	-.38479	.562826	1.379200	-.060406	.141532	.378820	.175601	.50290	.14066	.14066
.450	-.36118	.617845	1.381810	-.070228	.156826	.385898	.178232	.54517	.15446	.15446
.530	-.30732	.728637	1.388291	-.092355	.188273	.400335	.182453	.62575	.18216	.18216
.610	-.24458	.840023	1.396687	-.118229	.220887	.415046	.185011	.70086	.21001	.21001
.690	-.17290	.952167	1.407323	-.148447	.254683	.429882	.185220	.77029	.23804	.23804
.770	-.09221	1.065264	1.420573	-.183688	.289666	.444662	.183526	.83384	.26632	.26632
.850	-.00243	1.179540	1.436868	.224701	.325822	.459165	.178497	.89130	.29488	.29488
.930	.09656	1.295257	1.456700	.272265	.363118	.473124	.169815	.94251	.32381	.32381
1.010	.20486	1.422721	1.480625	.327120	.401499	.486219	.156763	.98732	.35318	.35318
1.090	.32265	1.532283	1.509248	.389802	.440880	.498068	.138526	.1.02562	.38307	.38307
1.170	.45009	1.654344	1.543204	.460385	.481144	.508220	.114185	.1.05736	.41359	.41359
1.210	.51751	1.716450	1.562374	.498427	.501561	.512498	.1.094416	.1.07077	.42911	.42911
1.250	.58742	1.779354	1.583099	.538014	.516148	.522136	.1.08256	.1.08256	.44484	.44484

TABLE III.- $T_e/T_w = 0.25$, $f_w = -0.5$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	p_u/p_{ue}
1.290	.65987	1.843120	1.605431	.578770	.542843	.519090	.064028	1.09273	.46078
1.330	.73488	1.907811	1.629408	.620147	.563652	.521241	.043148	1.10130	.47695
1.370	.81250	1.973494	1.655041	.661372	.584531	.522512	.019977	1.10832	.49337
1.410	.89278	2.040236	1.682302	.701396	.605440	.522808	-.005598	1.11381	.51006
1.450	.97574	2.108099	1.711117	.738823	.626341	.522031	-.033672	1.11781	.52702
1.490	1.06144	2.17144	1.742348	.771844	.647187	.520080	-.064314	1.12038	.54429
1.530	1.14993	2.247423	1.772775	.798153	.667930	.516851	-.097555	1.12158	.56186
1.570	1.24125	2.318978	1.805072	.814834	.688517	.512241	-.133376	1.12149	.57974
1.610	1.33546	2.391835	1.837790	.818544	.708390	.506148	-.171692	1.12017	.59796
1.650	1.43261	2.465999	1.870325	.804922	.728987	.498475	-.212333	1.11774	.61650
1.690	1.53276	2.541449	1.901895	.769462	.748745	.489134	-.255026	1.11427	.63536
1.730	1.63595	2.618124	1.931517	.766668	.768095	.478051	-.299373	1.10990	.65453
1.770	1.74222	2.695927	1.957990	.611037	.786965	.465169	-.344829	1.10473	.67398
1.810	1.85163	2.774702	1.979889	.477076	.805284	.450459	-.390689	1.09888	.69368
1.850	1.96421	2.854235	1.995581	.299927	.822978	.433921	-.436074	1.09251	.71356
1.890	2.07998	2.934241	2.003262	.076104	.839974	.415594	-.479938	1.08573	.73356
1.910	2.13906	2.974313	2.003505	-.053810	.848188	.405784	-.500929	1.08222	.74358
1.930	2.19895	3.014363	2.001030	-.195630	.856202	.395562	-.521079	1.07868	.75359
1.950	2.25964	3.054335	1.995603	-.349004	.864008	.384947	-.540222	1.07511	.76358
1.970	2.32112	3.094166	1.986997	-.513326	.871598	.373961	-.558185	1.07151	.77354
1.990	2.38340	3.133792	1.975003	-.687718	.878964	.362629	-.574799	1.06732	.78345
2.010	2.44647	3.173142	1.959430	-.871010	.886101	.350979	-.589892	1.06435	.79329
2.030	2.51033	3.212144	1.940113	-.1.061738	.893002	.339045	-.603301	1.06081	.80304
2.050	2.57496	3.250721	1.916923	-.1.258148	.899661	.326860	-.614871	1.05731	.81268
2.070	2.64035	3.288795	1.889763	-.1.458209	.906075	.314463	-.624458	1.05387	.82220
2.090	2.70650	3.326285	1.858585	-.1.656449	.912238	.301895	-.631935	1.05051	.83157
2.110	2.77340	3.363111	1.823385	-.1.859887	.918150	.289200	-.637195	1.04773	.84078
2.130	2.84102	3.399194	1.784211	-.2.056594	.923806	.276423	-.640152	1.04405	.84980
2.150	2.90936	3.434454	1.741164	-.2.266758	.929206	.263610	-.640749	1.04097	.85861
2.170	2.97840	3.468816	1.694402	-.2.427751	.934350	.250809	-.638954	1.03800	.86720
2.190	3.04811	3.502207	1.644133	-.2.596915	.939239	.238068	-.634767	1.03515	.87555
2.210	3.11848	3.534559	1.590621	-.2.751741	.943874	.225434	-.628217	1.03243	.88364
2.230	3.18948	3.565812	1.534174	-.2.889946	.948257	.212954	-.619367	1.02983	.89145
2.250	3.26110	3.595909	1.475147	-.3.009551	.952393	.200674	-.608307	1.02737	.89898
2.270	3.33331	3.624803	1.413927	-.3.108935	.956286	.188636	-.595157	1.02504	.90620
2.290	3.40609	3.652454	1.350931	-.3.186894	.929941	.176881	-.580065	1.02285	.91311

TABLE II. - $T_e/T_w = 0.25$, $T_w = -0.5$, $\text{Eu} = 1/3$ - Continued

η	r	r'	r''	r'''	r''''	θ	θ'	θ''	θ'''	u/u_e	pu/pue
2.310	3.47940	3.678832	1.286598	-3.242664	.963363	.165445	.563200	1.02079	.91971		
2.330	3.55323	3.703922	1.221374	-3.275941	.966561	.154263	.544751	1.01887	.92598		
2.350	3.62755	3.727684	1.155709	-3.286877	.969540	.143664	.524921	1.01708	.93192		
2.370	3.70233	3.750141	1.090044	-3.276059	.972310	.133374	.503925	1.01542	.93754		
2.390	3.77755	3.771288	1.024804	-3.244471	.974878	.123514	.481984	1.01388	.94282		
2.410	3.85317	3.791139	.960394	-3.193449	.977254	.114099	.459319	1.01246	.94778		
2.430	3.92918	3.809712	.897185	-3.124620	.979445	.105144	.436149	1.01116	.95243		
2.450	4.00555	3.827036	.8235515	-3.039839	.981462	.098655	.412686	1.00997	.95676		
2.470	4.08226	3.843145	.775684	-2.941120	.983315	.088637	.389130	1.00888	.96079		
2.490	4.15927	3.858078	.717949	-2.830575	.985011	.081090	.365671	1.00789	.96452		
2.510	4.23657	3.871878	.682525	-2.710344	.986561	.074009	.342480	1.00699	.96797		
2.530	4.31414	3.884595	.609586	-2.582547	.987974	.067388	.319712	1.00618	.97115		
2.550	4.39195	3.896279	.559260	-2.449230	.989260	.062127	.297505	1.00545	.97407		
2.570	4.46998	3.906983	.511640	-2.312325	.990426	.055483	.275975	1.00480	.97675		
2.590	4.54822	3.916763	.466779	-2.173621	.991482	.050172	.255222	1.00421	.97919		
2.610	4.62665	3.925673	.424697	-2.034740	.992436	.045268	.235325	1.00369	.98142		
2.630	4.70524	3.933769	.385382	-1.897120	.993295	.040753	.216345	1.00322	.98344		
2.650	4.78399	3.941107	.348796	-1.762012	.994068	.036608	.198330	1.00281	.98528		
2.670	4.86288	3.947739	.314878	-1.630478	.994762	.032813	.181308	1.00244	.98693		
2.690	4.94190	3.953719	.283547	-1.503397	.995383	.029349	.165294	1.00212	.98843		
2.710	5.02103	3.959097	.254708	-1.381467	.995938	.026195	.150293	1.00184	.98977		
2.730	5.10026	3.963923	.2288251	-1.265230	.996433	.023331	.136296	1.00159	.99098		
2.750	5.17958	3.968422	.204058	-1.155072	.996873	.020737	.123286	1.00137	.99206		
2.770	5.25899	3.972100	.182006	-1.051247	.997264	.018393	.111237	1.00118	.99302		
2.790	5.33846	3.975536	.161965	-953893	.997610	.016281	.100118	1.00101	.99388		
2.810	5.41800	3.978591	.143807	-863043	.997917	.014382	.089892	1.00086	.99465		
2.830	5.49760	3.981300	.127401	-778644	.998187	.012680	.080518	1.00074	.99532		
2.850	5.57725	3.983698	.112619	-700571	.998425	.011156	.071953	1.00063	.99592		
2.870	5.65695	3.985815	.099337	-628641	.998634	.009796	.064150	1.00054	.99645		
2.890	5.73668	3.987680	.087434	-562623	.998818	.008585	.057062	1.00046	.99692		
2.910	5.81646	3.989321	.076795	-502251	.998978	.007509	.050644	1.00039	.99733		
2.930	5.89626	3.990760	.067309	-447237	.999119	.006556	.044847	1.00033	.99769		
2.950	5.97608	3.992020	.058872	-397271	.999241	.005712	.039627	1.00028	.99800		
2.970	6.05594	3.993211	.051386	-352036	.999348	.004967	.034938	1.00023	.99828		
2.990	6.13581	3.994081	.044761	-311213	.999441	.004311	.030737	1.00020	.99852		
3.010	6.21570	3.994917	.038910	-274479	.999521	.003734	.026984	1.00016	.99873		

TABLE II. - $T_e/T_w = 0.25$, $f_w = -0.5$, $\epsilon_u = 1/3$ - Concluded

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	ρ_e/ρ_{e0}
3.050	6.37552	3.996271	.029227	-.212044	.999651	.002786	-.020665	1.000011	.99907
3.090	6.53540	3.997284	.021778	-.162340	.999747	.002063	-.015693	1.000008	.99932
3.130	6.69530	3.998037	.016100	-.123194	.999818	.001517	-.011820	1.000005	.99951
3.170	6.85524	3.998591	.011808	-.092674	.999870	.001106	-.008829	1.000004	.99965
3.210	7.01519	3.998996	.008592	-.069118	.999908	.000801	-.006541	1.000003	.99975
3.250	7.17515	3.999289	.006203	-.051111	.999935	.000575	-.004807	1.000002	.99982
3.290	7.33513	3.999501	.004443	-.037478	.999955	.000410	-.003504	1.000001	.99985
3.330	7.49511	3.999651	.003158	-.027252	.999969	.000290	-.002534	1.000001	.99991
3.370	7.65510	3.999758	.002227	-.019652	.999978	.000204	-.001818	1.000000	.99994
3.410	7.81509	3.999833	.001558	-.014055	.999985	.000142	-.001294	1.000000	.99996
3.450	7.97509	3.999885	.001082	-.009969	.999990	.000098	-.000914	1.000000	.99997
3.490	8.13508	3.999922	.000745	-.007013	.999993	.000068	-.000640	1.000000	.99998
3.530	8.29508	3.999947	.000509	-.004893	.999996	.000046	-.000445	1.000000	.99999
3.570	8.45508	3.999963	.000345	-.003387	.999997	.000031	-.000307	1.000000	.99999
3.610	8.61508	3.999975	.000232	-.002325	.999998	.000021	-.000210	1.000000	.99999
3.650	8.77508	3.999982	.000154	-.001583	.999999	.000014	-.000142	1.000000	1.00000
3.690	8.93508	3.999987	.000102	-.001069	.999999	.000009	-.000096	1.000000	1.00000
3.730	9.09508	3.999991	.000066	-.000716	1.000000	.000006	-.000064	1.000000	1.00000
3.770	9.25508	3.999993	.000043	-.000476	1.000000	.000004	-.000042	1.000000	1.00000
3.810	9.41508	3.999994	.000027	-.000314	1.000000	.000003	-.000028	1.000000	1.00000
3.850	9.57508	3.999995	.000017	-.000205	1.000000	.000002	-.000018	1.000000	1.00000
3.890	9.73508	3.999996	.000010	-.000133	1.000000	.000001	-.000012	1.000000	1.00000
3.930	9.89508	3.999996	.000006	-.000086	1.000000	.000001	-.000008	1.000000	1.00000
3.970	10.05508	3.999996	.000003	-.000055	1.000000	.000000	-.000005	1.000000	1.00000
4.050	10.31507	3.999996	.000000	-.000022	1.000000	.000000	-.000002	1.000000	1.00000
4.130	10.69507	3.999996	-.000001	-.000008	1.000000	.000000	-.000001	1.000000	1.00000

TABLE III.- $T_e/T_w = 0.25$, $f_w = -1.0$, $\mu_u = 1/3$

η	r	r'	r''	r'''	r''''	θ	θ'	θ''	θ'''	u/u_e	ρ_u/ρ_{ue}
.800	-1.00000	.0000000	1.194912	-0.024859	.000000	.211541	.127247	.000000	.000000	.000000	.000000
.005	-.99999	.005974	1.194788	-0.024571	.001059	.212179	.127790	.00597	.00149	.00149	.00149
.010	-.99994	.011948	1.194666	-0.024279	.002122	.212819	.128334	.01193	.00299	.00299	.00299
.015	-.99987	.017921	1.194545	-0.023984	.003187	.213462	.128878	.01788	.00448	.00448	.00448
.020	-.99976	.023893	1.194426	-0.023686	.004256	.214108	.129422	.02382	.00597	.00597	.00597
.025	-.99963	.029865	1.194309	-0.023384	.005329	.214757	.129967	.02975	.00747	.00747	.00747
.030	-.99946	.035836	1.194192	-0.023079	.006404	.215408	.130512	.03566	.00896	.00896	.00896
.040	-.99904	.047777	1.193965	-0.022498	.008555	.216718	.131504	.04747	.01194	.01194	.01194
.050	-.99851	.059716	1.193743	-0.021824	.010738	.218040	.132697	.05923	.01493	.01493	.01493
.060	-.99765	.071652	1.193528	-0.021175	.01325	.219372	.133792	.07096	.01791	.01791	.01791
.070	-.99707	.083586	1.193320	-0.020511	.015126	.220716	.134888	.08264	.02090	.02090	.02090
.080	-.99618	.095519	1.193118	-0.019833	.017340	.222070	.135985	.09428	.02388	.02388	.02388
.090	-.99516	.107449	1.192923	-0.019140	.019567	.223435	.137083	.10587	.02686	.02686	.02686
.110	-.99278	.131303	1.192555	-0.017709	.024064	.226199	.139282	.12893	.03283	.03283	.03283
.130	-.98991	.155151	1.192215	-0.016215	.028616	.229007	.141484	.15182	.03879	.03879	.03879
.150	-.98557	.178992	1.191906	-0.014657	.033224	.231858	.143687	.17453	.04475	.04475	.04475
.170	-.98275	.202828	1.191629	-0.013032	.037890	.234754	.145890	.19706	.05071	.05071	.05071
.190	-.97846	.226658	1.191386	-0.011339	.042615	.237694	.148093	.21941	.05666	.05666	.05666
.210	-.97369	.250483	1.191176	-0.00975	.047398	.240678	.150294	.24158	.06262	.06262	.06262
.250	-.96271	.298124	1.190867	-0.005825	.057147	.246778	.154683	.28535	.07453	.07453	.07453
.290	-.94984	.345755	1.190715	-0.001763	.067143	.253052	.159045	.32834	.08644	.08644	.08644
.330	-.93505	.393383	1.190731	.002632	.077393	.259501	.163369	.37055	.09835	.09835	.09835
.370	-.91836	.441016	1.190930	.007386	.087905	.266121	.167637	.41194	.11025	.11025	.11025
.410	-.89977	.488660	1.191327	.012521	.098685	.272911	.171836	.45249	.12217	.12217	.12217
.450	-.87927	.536325	1.191937	.018068	.109740	.279867	.175945	.49218	.13408	.13408	.13408
.530	-.83255	.631750	1.193868	.030515	.132701	.294261	.183819	.56887	.15794	.15794	.15794
.610	-.77819	.727372	1.196874	.045004	.156838	.309261	.191080	.64181	.18184	.18184	.18184
.690	-.71616	.823283	1.201132	.061863	.182198	.324811	.197513	.71078	.20582	.20582	.20582
.770	-.64645	.919592	1.206846	.081484	.208821	.340835	.202865	.77557	.22990	.22990	.22990
.850	-.56901	1.016424	1.214255	.104334	.236741	.357233	.206841	.83595	.25411	.25411	.25411
.930	-.49380	1.113926	1.223640	.130960	.265985	.373883	.209089	.89171	.27848	.27848	.27848
1.010	-.39076	1.212268	1.235327	.162002	.296565	.390030	.209203	.94263	.30307	.30307	.30307
1.090	-.26981	1.311650	1.246698	.198193	.328483	.407286	.206708	.98851	.32791	.32791	.32791
1.170	-.18087	1.412303	1.267197	.240345	.361722	.423619	.201053	1.02916	.35308	.35308	.35308
1.250	-.06380	1.514498	1.288336	.289317	.396246	.439353	.191602	1.06441	.37862	.37862	.37862
1.330	.06150	1.618549	1.313692	.345928	.431994	.454155	.177629	1.09415	.40464	.40464	.40464

TABLE III.- $T_e/T_w = 0.25$, $f_w = -1.0$, $F_u = 1/3$ - Continued

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	$\rho^{11}/\rho e u_e$
1.410	.19522	1.724819	1.343904	.410804	.468875	.467631	.158313	1.11828	.3120
1.490	.33754	1.833722	1.379644	.484092	.506767	.479318	.132740	1.13677	.45843
1.530	.41200	1.889306	1.399794	.523694	.526042	.484325	.117303	1.14392	.47233
1.570	.48870	1.945727	1.421563	.564981	.545504	.488676	.09930	1.14968	.48643
1.610	.56767	2.003053	1.445010	.607574	.565226	.492292	.080495	1.15407	.50076
1.650	.64896	2.061351	1.470178	.650910	.584877	.495087	.058876	1.15712	.51534
1.690	.73260	2.120690	1.497082	.694200	.604721	.496971	.034957	1.15887	.53017
1.730	.81863	2.181140	1.525699	.736364	.624621	.497851	.008638	1.15935	.54529
1.770	.90710	2.242768	1.555957	.775971	.644534	.497629	-.020163	1.15861	.56069
1.810	.99807	2.305637	1.587717	.811160	.664415	.496205	-.051495	1.15671	.57641
1.850	1.09157	2.369803	1.620758	.839574	.684213	.493476	-.085371	1.15372	.59245
1.890	1.18767	2.435310	1.654753	.858283	.703874	.489342	-.121745	1.14970	.60883
1.930	1.28641	2.502190	1.689243	.863740	.723340	.483704	-.160506	1.14474	.62555
1.970	1.38786	2.570448	1.723618	.851761	.742549	.476472	-.201452	1.13893	.64261
2.010	1.49207	2.640067	1.757087	.817568	.761436	.467563	-.244277	1.13239	.66002
2.050	1.59908	2.710990	1.786657	.755920	.779931	.456911	-.288546	1.12520	.67772
2.090	1.70896	2.783118	1.817121	.661357	.797965	.444168	-.333683	1.11750	.69578
2.130	1.82175	2.856299	1.841056	.528606	.815465	.430215	-.378952	1.10939	.71407
2.170	1.93748	2.930320	1.858840	.353147	.832358	.414163	-.423454	1.10101	.73258
2.210	2.05618	3.004900	1.865700	.131955	.848574	.396363	-.466134	1.09249	.75122
2.230	2.11665	3.042292	1.870077	.003882	.856407	.386836	-.486422	1.08821	.76057
2.250	2.17787	3.079685	1.868779	-.135614	.864045	.376912	-.505801	1.08394	.76992
2.270	2.23984	3.117024	1.861573	-.286196	.871481	.366611	-.524108	1.07970	.77926
2.290	2.30255	3.154247	1.857262	-.447096	.878707	.355956	-.541178	1.07550	.78856
2.310	2.36601	3.191292	1.846632	-.617395	.885717	.344974	-.556848	1.07136	.79782
2.330	2.43020	3.228089	1.832512	-.795872	.892504	.333693	-.570960	1.06728	.80702
2.350	2.49513	3.264568	1.814753	-.981022	.899063	.322147	-.583360	1.06326	.81614
2.370	2.56078	3.300654	1.793239	-.1171075	.905388	.310371	-.593908	1.05937	.82516
2.390	2.62715	3.336272	1.767891	-.1364006	.911477	.298403	-.602476	1.05557	.83407
2.410	2.69423	3.371344	1.738674	-.1557577	.917324	.286286	-.608951	1.05188	.84284
2.430	2.76200	3.405793	1.705500	-.1.749379	.922927	.274060	-.613243	1.04832	.85145
2.450	2.83046	3.439543	1.668728	-.1.936880	.92886	.261771	-.615286	1.04488	.85989
2.470	2.89958	3.4772518	1.628171	-.2.117498	.933398	.249464	-.615036	1.04159	.86813
2.490	2.96935	3.504646	1.584091	-.2.288668	.938264	.237185	-.612480	1.03843	.87616
2.510	3.03976	3.535860	1.536703	-.2.447916	.942886	.224980	-.607633	1.03543	.88396
2.530	3.11078	3.566094	1.486269	-.2.592939	.947264	.212894	-.600538	1.03257	.89152

TABLE III.- $T_e/T_w = 0.25$, $f_w = -1.0$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	$au/peue$
2.550	3.18240	3.595292	1.433094	-2.721679	.951403	.200973	-.591269	1.02986	.89882		
2.570	3.25458	3.623402	1.377522	-2.832346	.955305	.189257	-.579925	1.02731	.90585		
2.590	3.32732	3.650380	1.319930	-2.923562	.958975	.177789	-.566635	1.02491	.91259		
2.610	3.40059	3.676188	1.260716	-2.994308	.962418	.166604	-.551547	1.02267	.91905		
2.630	3.47436	3.700500	1.200297	-3.043995	.965641	.155738	-.534833	1.02057	.92520		
2.650	3.54862	3.724195	1.139097	-3.072462	.968650	.145220	-.516679	1.01861	.93105		
2.670	3.62332	3.746362	1.077538	-3.079968	.971452	.135079	-.497283	1.01680	.93659		
2.690	3.69846	3.767297	1.016033	-3.067166	.974056	.125336	-.476853	1.01513	.94182		
2.710	3.77401	3.787006	.954979	-3.035068	.976168	.116010	-.455599	1.01359	.94675		
2.730	3.84993	3.805502	.894750	-2.984497	.978699	.107116	-.433370	1.01217	.95138		
2.750	3.92622	3.822804	.835688	-2.918530	.980756	.098664	-.411453	1.01088	.95570		
2.770	4.00284	3.838939	.778106	-2.837438	.982649	.090659	-.388964	1.00969	.95973		
2.790	4.07977	3.853940	.722275	-2.743625	.984385	.083105	-.3666450	1.00862	.96348		
2.810	4.15699	3.867843	.668432	-2.639069	.985976	.076000	-.3444084	1.00764	.96696		
2.830	4.23448	3.8806692	.616771	-2.52765	.987428	.069340	-.3222025	1.00676	.97017		
2.850	4.31221	3.892530	.567447	-2.405677	.988752	.063116	-.300412	1.00597	.97313		
2.870	4.39017	3.902406	.520577	-2.280689	.989956	.057320	-.279370	1.00526	.97585		
2.890	4.46834	3.913370	.476240	-2.152578	.991048	.051937	-.259003	1.00462	.97834		
2.910	4.54670	3.922473	.434484	-2.022984	.992036	.046954	-.239400	1.00405	.98062		
2.930	4.62523	3.930766	.395321	-1.893380	.992929	.042356	-.220630	1.00354	.98269		
2.950	4.70393	3.938303	.358740	-1.765086	.993733	.038123	-.202748	1.00309	.98458		
2.970	4.78276	3.945133	.324702	-1.639237	.994456	.034240	-.185791	1.00269	.98628		
2.990	4.86173	3.951307	.293148	-1.516797	.995104	.030685	-.169785	1.00233	.98783		
3.010	4.94081	3.956875	.264002	-1.398561	.995685	.027442	-.154740	1.00202	.98922		
3.030	5.02000	3.961883	.237174	-1.285162	.996204	.024489	-.140656	1.00175	.99047		
3.050	5.09928	3.966376	.212560	-1.177086	.996667	.021809	-.127524	1.00151	.99159		
3.070	5.17865	3.970399	.190053	-1.074681	.997078	.019382	-.115325	1.00130	.99260		
3.090	5.25809	3.973992	.169534	-9.78174	.997443	.017190	-.104034	1.00112	.99350		
3.110	5.33761	3.977193	.150886	-3.87687	.997767	.015215	-.093619	1.00096	.99430		
3.130	5.41718	3.980039	.133986	-8.3244	.998053	.013440	-.084044	1.00082	.99501		
3.150	5.49681	3.982563	.118716	-7.24791	.998306	.011848	-.075269	1.00070	.99564		
3.170	5.57648	3.984798	.104956	-6.52213	.998528	.010424	-.067254	1.00060	.99620		
3.190	5.65620	3.986771	.092590	-5.85337	.998724	.009153	-.059955	1.00051	.99669		
3.210	5.73595	3.988510	.081506	-5.23948	.998896	.008021	-.053326	1.00043	.99713		
3.230	5.81571	3.990039	.071597	-4.67801	.999046	.007016	-.047324	1.00037	.99751		
3.250	5.89555	3.991381	.062761	-4.16626	.999177	.005124	-.041905	1.00031	.99785		

TABLE III.- $T_e/T_w = 0.25$, $f_w = -1.0$, $E_u = 1/3$ - Concluded

η	f	f'	f''	f'''	θ	θ'	θ''	θ'''	u/u_e	du/du_e
3.270	5.97539	3.992556	.054901	-.370139	.999291	.005336	-.037025	1.00026	.99814	
3.290	6.05525	3.993583	.047926	-.328045	.999391	.004640	-.032642	1.00022	.99840	
3.310	6.13513	3.994478	.041752	-.290048	.999478	.004027	-.028717	1.00018	.99862	
3.350	6.29494	3.995934	.031495	-.225167	.999618	.003016	-.022084	1.00013	.99898	
3.390	6.45480	3.997029	.023567	-.173210	.999722	.002442	-.016841	1.00009	.99926	
3.430	6.61470	3.997844	.017495	-.132056	.999799	.001654	-.012736	1.00006	.99946	
3.470	6.77463	3.998448	.012884	-.099797	.999856	.001211	-.009552	1.00004	.99961	
3.510	6.93457	3.998890	.009411	-.074766	.999898	.000880	-.007106	1.00003	.99972	
3.550	7.09454	3.999213	.006821	-.055533	.999928	.000635	-.005244	1.00002	.99980	
3.590	7.25451	3.999446	.004908	-.040899	.999949	.000454	-.003838	1.00001	.99986	
3.630	7.41449	3.999612	.003503	-.029869	.999965	.000323	-.002787	1.00001	.99990	
3.670	7.57448	3.999731	.002481	-.021631	.999976	.000227	-.002007	1.00001	.99993	
3.710	7.73447	3.999815	.001743	-.015537	.999983	.000159	-.001434	1.00000	.99995	
3.750	7.89446	3.999873	.001215	-.011067	.999989	.000111	-.001017	1.00000	.99997	
3.790	8.05446	3.999914	.000841	-.007818	.999992	.000076	-.000715	1.00000	.99998	
3.830	8.21446	3.999942	.000577	-.005478	.999995	.000052	-.000499	1.00000	.99999	
3.870	8.37445	3.999961	.000393	-.003807	.999997	.000035	-.000345	1.00000	.99999	
3.910	8.53445	3.999974	.000265	-.002624	.999998	.000024	-.000237	1.00000	.99999	
3.950	8.69445	3.999983	.000178	-.001794	.999999	.000016	-.000162	1.00000	1.00000	
3.990	8.85445	3.999989	.000118	-.001217	.999999	.000011	-.000119	1.00000	1.00000	
4.030	9.01445	3.999993	.000078	-.000818	1.000000	.000007	-.000073	1.00000	1.00000	
4.670	9.17445	3.999996	.000051	-.000546	1.000000	.000005	-.000049	1.00000	1.00000	
4.110	9.33445	3.999997	.000033	-.000361	1.000000	.000003	-.000032	1.00000	1.00000	
4.150	9.49445	3.999998	.000021	-.000237	1.000000	.000002	-.000021	1.00000	1.00000	
4.190	9.65445	3.999999	.000013	-.000154	1.000000	.000001	-.000014	1.00000	1.00000	
4.230	9.81445	3.999999	.000008	-.000100	1.000000	.000001	-.000009	1.00000	1.00000	
4.270	9.97445	4.000000	.000005	-.000064	1.000000	.000000	-.000006	1.00000	1.00000	
4.310	10.13445	4.000000	.000002	-.000026	1.000000	.000000	-.000002	1.00000	1.00000	
4.350	10.29445	4.000000	.000000	-.000010	1.000000	.000000	-.000001	1.00000	1.00000	
4.390	10.45445	4.000000	-.000000	-.000004	1.000000	.000000	-.000000	1.00000	1.00000	
4.510	10.93445	4.000000								

TABLE IV.- $T_e/T_w = 0.5$, $f_w = 0$, $\beta_u = 1/3$

γ	f	f''	f'''	$f^{(1)}$	θ	θ'	θ''	u/u_e	$\beta_{11}/\beta_{12}u_e$
0.00	0.00000	1.00000	1.043493	-0.093747	0.000000	0.404757	0.069627	0.00000	0.00000
0.05	0.00001	0.00241	1.043024	-0.094046	0.002025	0.405106	0.069815	0.00524	0.00262
0.10	0.00005	0.010430	1.047523	-0.094347	0.004051	0.405455	0.069999	0.01046	0.00524
0.15	0.00012	0.015717	1.047080	-0.094649	0.006079	0.405806	0.070179	0.01567	0.00786
0.20	0.00021	0.020951	1.046606	-0.094953	0.008109	0.406157	0.070355	0.02087	0.01048
0.25	0.00033	0.026103	1.046131	-0.095259	0.010141	0.406509	0.070527	0.02605	0.01309
0.30	0.00047	0.031412	1.045653	-0.095567	0.012174	0.406862	0.070694	0.03122	0.01571
0.40	0.00084	0.041864	1.044695	-0.096188	0.016246	0.407571	0.071016	0.04152	0.02093
0.50	0.00131	0.052306	1.043730	-0.096816	0.020326	0.408282	0.071322	0.05177	0.02615
0.60	0.00188	0.062739	1.042758	-0.097451	0.024412	0.408997	0.071609	0.06197	0.03137
0.70	0.00256	0.073161	1.041781	-0.098095	0.028506	0.409715	0.071880	0.07212	0.03658
0.80	0.00335	0.083574	1.040796	-0.098746	0.032606	0.410435	0.072133	0.08224	0.04179
0.90	0.00423	0.093977	1.039806	-0.099405	0.036714	0.411157	0.072367	0.09225	0.04699
1.10	0.00632	0.114753	1.037804	-0.100750	0.044952	0.412609	0.072782	0.11217	0.05738
1.30	0.00842	0.135489	1.035775	-0.102129	0.053219	0.414068	0.073123	0.13188	0.06774
1.50	0.01174	0.156184	1.033719	-0.103545	0.061515	0.415533	0.073388	0.15138	0.07809
1.70	0.01507	0.176338	1.031633	-0.105000	0.069840	0.417003	0.073575	0.17066	0.08842
1.90	0.01861	0.197449	1.029519	-0.106495	0.078195	0.418476	0.073683	0.18973	0.09872
2.10	0.02297	0.218018	1.027373	-0.108032	0.086579	0.419950	0.073709	0.20858	0.10901
2.50	0.03291	0.259026	1.022988	-0.111242	0.103436	0.422895	0.073508	0.24563	0.12951
2.90	0.04349	0.299856	1.018471	-0.114645	0.120411	0.425826	0.072956	0.28180	0.14993
3.30	0.05650	0.340502	1.013814	-0.118258	0.137502	0.428727	0.072037	0.31709	0.17025
3.70	0.07093	0.380959	1.009008	-0.122098	0.154708	0.431584	0.070735	0.35149	0.19048
4.10	0.08497	0.421220	1.004043	-0.126185	0.172028	0.434380	0.069030	0.38499	0.21061
4.50	0.10462	0.461280	0.998909	-0.130538	0.189457	0.437100	0.066906	0.41758	0.23064
5.30	0.14471	0.540765	0.988891	-0.140124	0.224634	0.442242	0.061330	0.48003	0.27038
6.10	0.19112	0.619353	0.976424	-0.151027	0.260202	0.446863	0.053864	0.53877	0.30968
6.90	0.24378	0.696973	0.963887	-0.163428	0.296114	0.450806	0.044375	0.59378	0.34849
7.70	0.30261	0.773546	0.950261	-0.177513	0.332309	0.453906	0.032745	0.64502	0.38677
8.50	0.36752	0.849983	0.935435	-0.193466	0.368712	0.455986	0.018877	0.69247	0.42449
9.30	0.43841	0.923180	0.919252	-0.211459	0.405234	0.456865	0.002713	0.73613	0.46159
1.010	0.51519	0.996022	0.901543	-0.231637	0.441773	0.456358	-0.015761	0.77601	0.49801
1.090	0.59774	1.067381	0.882129	-0.254099	0.478210	0.454283	-0.036494	0.81217	0.53369
1.170	0.68593	1.137112	0.860826	-0.278875	0.514412	0.450463	-0.059355	0.84464	0.56856
1.250	0.77963	1.205058	0.837449	-0.305895	0.550233	0.444736	-0.084122	0.87353	0.60253
1.330	0.87863	1.271044	0.811828	-0.334957	0.585515	0.436962	-0.110462	0.89894	0.63552

TABLE IV.- $T_e/T_w = 0.5$, $f_w = 0$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	μ/μ_{eu}
1.410	0.98294	1.334886	0.783812	-0.365691	0.620089	0.427032	-0.137920	0.92101	0.66744
1.490	1.09220	1.396387	0.753288	-0.397530	0.653781	0.414880	-0.165918	0.93592	0.69819
1.570	1.20629	1.455344	0.720199	-0.429683	0.686410	0.400490	-0.193754	0.95586	0.72767
1.650	1.32499	1.511551	0.684558	-0.461131	0.717800	0.383906	-0.220622	0.96905	0.75578
1.730	1.44806	1.564808	0.646470	-0.490646	0.747780	0.365240	-0.245637	0.97974	0.78240
1.810	1.57527	1.614926	0.606144	-0.516844	0.776188	0.344678	-0.267885	0.98818	0.80746
1.890	1.70636	1.6661740	0.563903	-0.538273	0.802885	0.322476	-0.286480	0.99465	0.83087
1.970	1.84106	1.705112	0.520184	-0.535357	0.827750	0.298960	-0.300630	0.99941	0.85256
2.050	1.97908	1.74945	0.475532	-0.561434	0.850694	0.274510	-0.309713	1.00274	0.87247
2.130	2.12015	1.781190	0.430573	-0.561107	0.871658	0.249550	-0.313334	1.00490	0.89059
2.130	2.12015	1.781190	0.430573	-0.561107	0.871658	0.249550	-0.313334	1.00490	0.89059
2.170	2.19174	1.797964	0.408189	-0.557715	0.881390	0.237018	-0.313049	1.00561	0.89898
2.210	2.26398	1.813847	0.385985	-0.552159	0.890620	0.224525	-0.311377	1.00612	0.90692
2.250	2.33683	1.828847	0.364045	-0.544473	0.899353	0.212126	-0.308349	1.00646	0.91442
2.290	2.41027	1.8642975	0.342454	-0.534725	0.907592	0.199474	-0.304016	1.00664	0.92149
2.330	2.48426	1.8856249	0.321293	-0.523016	0.915346	0.187821	-0.298443	1.00669	0.92812
2.370	2.55876	1.9049686	0.300637	-0.509476	0.922621	0.176014	-0.291713	1.00664	0.93434
2.410	2.63375	1.9280307	0.280557	-0.494263	0.929431	0.164498	-0.283920	1.00650	0.94015
2.450	2.70918	1.9391139	0.261116	-0.477554	0.935786	0.153313	-0.275170	1.00629	0.94557
2.490	2.78503	1.901206	0.242370	-0.459547	0.941701	0.142496	-0.265579	1.00602	0.95060
2.530	2.86126	1.910538	0.224367	-0.440448	0.947191	0.132076	-0.255267	1.00572	0.95527
2.570	2.93786	1.919166	0.207146	-0.420474	0.952272	0.122082	-0.244360	1.00538	0.95958
2.611	3.01479	1.927121	0.190738	-0.399840	0.956963	0.112534	-0.232984	1.00503	0.96356
2.650	3.09202	1.934436	0.175165	-0.378759	0.961281	0.103448	-0.221261	1.00467	0.96722
2.730	3.24710	1.947282	0.146571	-0.336070	0.968874	0.086705	-0.197257	1.00395	0.97364
2.810	3.40353	1.957978	0.121380	-0.293896	0.975205	0.071888	-0.173235	1.00326	0.97899
2.890	3.56053	1.966792	0.099501	-0.253469	0.980427	0.058968	-0.149949	1.00264	0.98340
2.970	3.71817	1.973981	0.080755	-0.215722	0.984688	0.047861	-0.127993	1.00210	0.98699
3.050	3.87633	1.979789	0.064900	-0.181261	0.988129	0.038443	-0.107789	1.00165	0.98989
3.130	4.03491	1.984434	0.051655	-0.150496	0.990880	0.030563	-0.089601	1.00127	0.99222
3.210	4.19382	1.998115	0.040722	-0.123484	0.993055	0.024052	-0.073550	1.00096	0.99406
3.290	4.35298	1.991003	0.031801	-0.100179	0.994760	0.016739	-0.059643	1.00072	0.99550
3.370	4.51236	1.993248	0.024602	-0.080382	0.996081	0.014455	-0.047795	1.00053	0.99662
3.450	4.67189	1.994978	0.018855	-0.063806	0.997095	0.011041	-0.037860	1.00039	0.99749
3.530	4.83154	1.996297	0.014316	-0.050116	0.997867	0.008352	-0.029653	1.00028	0.99815
3.610	4.99129	1.997295	0.010762	-0.038954	0.998448	0.005256	-0.022969	1.00020	0.99865

TABLE IV.- $T_e/T_w = 0.5$, $F_w = 0$, $Eu = 1/3$ - Concluded

η	F	F'	F''	F'''	F''''	θ	θ'	θ''	θ'''	u/u_e	mu/mue
3.690	5.15110	1.998042	0.068025	-0.029966	0.998881	0.004642	-0.017599	1.000014	0.99902		
3.770	5.31097	1.998596	0.05925	-0.022816	0.99201	0.03411	-0.013340	1.000010	0.99930		
3.850	5.47088	1.999004	0.04334	-0.017195	0.99435	0.02482	-0.010005	1.000007	0.99950		
3.930	5.63081	1.999300	0.03140	-0.012827	0.99604	0.01790	-0.007426	1.000005	0.99965		
4.010	5.79076	1.999514	0.02254	-0.009471	0.99726	0.01276	-0.005454	1.000003	0.99976		
4.090	5.95073	1.999667	0.01603	-0.006922	0.9981	0.00904	-0.003965	1.000002	0.99983		
4.170	6.11071	1.999776	0.01129	-0.005007	0.9987	0.00633	-0.002853	1.000001	0.99989		
4.250	6.27069	1.999852	0.00788	-0.003585	0.99916	0.00439	-0.002031	1.000001	0.99993		
4.330	6.43068	1.999904	0.00545	-0.002541	0.99945	0.00302	-0.001432	1.000001	0.99995		
4.410	6.59068	1.999941	0.00374	-0.001782	0.99965	0.00206	-0.000999	1.000001	0.99997		
4.490	6.75067	1.999966	0.00254	-0.001238	0.99979	0.00139	-0.000690	1.000000	0.99998		
4.570	6.91067	1.999982	0.00171	-0.000850	0.99988	0.00093	-0.000472	1.000000	0.99999		
4.650	7.07067	1.999994	0.00115	-0.000578	0.99994	0.00061	-0.000319	1.000000	1.00000		
4.730	7.23067	2.000001	0.00076	-0.000389	0.99998	0.00040	-0.000214	1.000000	1.00000		
4.810	7.39067	2.000006	0.00051	-0.000259	1.000001	0.00026	-0.000142	1.000000	1.00000		
4.890	7.55067	2.000010	0.00034	-0.000171	1.000002	0.000093	-0.000093	1.000000	1.00000		
4.970	7.71067	2.000012	0.00022	-0.000112	1.000003	0.00011	-0.000061	1.000000	1.00001		
5.050	7.87067	2.000013	0.00015	-0.000072	1.000004	0.00007	-0.000039	1.000000	1.00001		
5.130	8.03067	2.000014	0.00010	-0.000046	1.000005	0.00004	-0.000025	1.000000	1.00001		
5.210	8.19067	2.000015	0.00007	-0.000029	1.000005	0.00003	-0.000016	1.000000	1.00001		
5.290	8.35068	2.000016	0.00006	-0.000018	1.000005	0.00002	-0.000010	1.000000	1.00001		
5.450	8.67068	2.000016	0.00004	-0.000007	1.000005	0.00001	-0.000004	1.000000	1.00001		
5.610	8.99068	2.000017	0.00003	-0.000003	1.000005	0.00000	-0.000001	1.000000	1.00001		

TABLE V. - $T_e/T_w = 0.5$, $\xi_w = -0.5$, $\xi_u = 1/3$

ξ	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	$\rho u/\rho_e u_e$
.000	-.50000	.000000	.867422	-.057654	.003000	.273157	.095448	.000000	.000000
.005	-.49999	.004336	.867133	-.057762	.001367	.273635	.095720	.004333	.00217
.010	-.49996	.008671	.866844	-.057871	.002736	.274115	.095990	.00866	.00434
.015	-.49990	.013005	.866554	-.057980	.004108	.274595	.096259	.01298	.00650
.020	-.49983	.017337	.866264	-.058030	.005482	.275077	.095526	.01729	.00867
.025	-.49973	.021667	.865973	-.058200	.006859	.275560	.096791	.02159	.01083
.030	-.49961	.025997	.865682	-.058311	.008238	.276045	.097055	.02589	.01300
.040	-.49931	.034651	.865098	-.058535	.011003	.277018	.097578	.03446	.01733
.050	-.49892	.043299	.864511	-.058761	.013778	.277997	.098094	.04300	.02165
.060	-.49844	.051941	.863923	-.058990	.016563	.278980	.098603	.05151	.02597
.070	-.49788	.060577	.863332	-.059222	.019358	.279969	.099106	.05999	.03029
.090	-.49723	.069207	.862738	-.059456	.022163	.280962	.099601	.06844	.03460
.090	-.49649	.077832	.862143	-.059693	.024977	.281961	.100089	.07686	.03892
.110	-.49477	.095063	.860944	-.060175	.030636	.283972	.101043	.09361	.04753
.130	-.49269	.112269	.859735	-.060669	.036336	.286002	.101966	.11023	.05613
.150	-.49027	.129452	.858517	-.061176	.042077	.288050	.102857	.12673	.06473
.170	-.48751	.146610	.857288	-.061697	.047858	.290116	.103715	.14310	.07331
.190	-.48441	.163743	.856049	-.062231	.053681	.292199	.104538	.15935	.08187
.210	-.48096	.180852	.854799	-.062780	.05946	.294298	.105325	.17547	.09043
.250	-.47305	.214993	.852265	-.063925	.071403	.298540	.106786	.20732	.10750
.290	-.46377	.249033	.849684	-.065138	.083430	.302838	.108085	.23864	.12452
.330	-.45313	.282967	.847053	-.066427	.095631	.307185	.109210	.26944	.14448
.370	-.44113	.316796	.844369	-.067798	.108006	.311573	.110147	.29969	.15840
.410	-.42778	.350516	.841628	-.069260	.12057	.315994	.110884	.32939	.17526
.450	-.41309	.384125	.838827	-.070821	.133286	.320440	.111406	.35853	.19206
.520	-.37968	.451001	.833026	-.074274	.152778	.329373	.111742	.41508	.22550
.610	-.34024	.517402	.826929	-.078237	.185985	.338291	.111030	.46929	.25870
.720	-.29691	.583301	.820492	-.082797	.213402	.347106	.109134	.52106	.29165
.770	-.24763	.648670	.813663	-.088054	.241516	.355717	.105914	.57034	.32434
.850	-.19314	.713475	.806382	-.094118	.270308	.364013	.101224	.61705	.35674
.930	-.13349	.777677	.798580	-.101108	.299747	.371870	.094919	.66112	.38884
1.010	-.05873	.841232	.790177	-.109157	.329792	.379153	.096857	.70252	.42062
1.090	.00109	.904087	.781083	-.118404	.360392	.385717	.076905	.74117	.45204
1.170	.67591	.966184	.771196	-.128994	.391483	.391405	.064947	.77706	.48309
1.250	.15566	1.027454	.760404	-.141072	.422989	.396053	.050891	.81015	.51373
1.330	.24027	1.037821	.748581	-.154779	.454819	.399490	.034682	.84044	.54391

TABLE V.- $T_e/T_w = 0.5$, $f_w = -0.5$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	$pu/p_e u_e$
1.410	.32968	1.147196	.735592	-.170241	.486870	.401544	.016308	.86793	.57360
1.490	.42380	1.205481	.721293	-.187551	.519025	.402043	-.004180	.89264	.60274
1.570	.52253	1.262564	.705534	-.206758	.551151	.400822	-.026659	.91463	.63128
1.650	.62577	1.318323	.688162	-.227845	.583106	.397730	-.050919	.93396	.65916
1.730	.73342	1.372623	.669031	-.250700	.614735	.392636	-.076650	.95072	.68631
1.810	.84535	1.425317	.648009	-.275093	.645872	.385439	-.103435	.96503	.71266
1.890	.96142	1.476251	.624985	-.300649	.676347	.376073	-.130744	.97702	.73813
1.970	1.08150	1.525260	.599889	-.326826	.705985	.364523	-.157938	.98685	.76263
2.050	1.20541	1.572177	.572696	-.352905	.734613	.350826	-.184284	.99471	.78609
2.130	1.33299	1.616836	.543451	-.377795	.762063	.335082	-.208982	1.00077	.80842
2.210	1.46404	1.659077	.512271	-.401060	.788176	.317455	-.231204	1.00525	.662954
2.290	1.59837	1.698754	.479365	-.420979	.812812	.298177	-.250144	1.00837	.84938
2.370	1.73577	1.735738	.445029	-.436621	.835849	.277539	-.265077	1.01033	.86787
2.450	1.87601	1.769931	.409647	-.446953	.857192	.255886	-.275428	1.01135	.88497
2.530	2.01888	1.801266	.373680	-.451147	.876774	.233603	-.280787	1.01161	.90063
2.610	2.16414	1.829718	.337610	-.486882	.894563	.211096	-.281032	1.01132	.91436
2.690	2.31156	1.855302	.302070	-.439417	.910555	.188771	-.276265	1.01062	.92765
2.770	2.46091	1.878077	.267506	-.423620	.924781	.167016	-.266852	1.00967	.93504
2.850	2.61198	1.898144	.234446	-.401952	.937302	.146181	-.253377	1.00858	.94907
2.930	2.76455	1.915640	.203322	-.375395	.948203	.126562	-.236595	1.00743	.95782
3.010	2.91842	1.930736	.174479	-.345153	.957591	.108390	-.217364	1.00631	.96537
3.090	3.07341	1.943624	.148160	-.312530	.965588	.091825	-.196575	1.00525	.97181
3.170	3.22934	1.954513	.124503	-.278820	.972328	.076957	-.175082	1.00430	.97726
3.250	3.38608	1.963616	.103547	-.245202	.977947	.063811	-.153659	1.00346	.98181
3.330	3.54348	1.971150	.085243	-.212678	.982582	.052354	-.132953	1.00274	.98558
3.410	3.70143	1.977322	.069470	-.182031	.986366	.042507	-.113468	1.00214	.98866
3.490	3.85982	1.982328	.056055	-.153820	.989423	.034158	-.095563	1.00165	.99116
3.570	4.01857	1.986348	.044787	-.128386	.991867	.027170	-.079458	1.00125	.99317
3.650	4.17761	1.989544	.035437	-.105885	.993802	.021395	-.065252	1.00094	.99477
3.730	4.33688	1.992062	.027768	-.086321	.995319	.016680	-.052942	1.00069	.99603
3.810	4.49633	1.994026	.021551	-.069280	.996495	.012877	-.042453	1.00051	.99701
3.890	4.65592	1.995543	.016566	-.054468	.997399	.009843	-.033654	1.00037	.99777
3.970	4.81561	1.996704	.012613	-.043738	.998087	.007452	-.026380	1.00026	.99835
4.050	4.97538	1.997584	.009512	-.034120	.998606	.005587	-.020451	1.00018	.99879
4.130	5.13521	1.998244	.007105	-.026335	.998992	.004149	-.015684	1.00013	.99912
4.210	5.29509	1.998736	.005257	-.020113	.999279	.003021	-.011900	1.00009	.99937

TABLE V.- $T_e/T_w = 0.5$, $f_w = -0.5$, $E_u = 1/3$ - Concluded

η	f'	f''	f'''	f''''	θ	θ'	θ''	u/u_e	pu/peu_e
4.290	5.45501	1.999097	.003852	-.015200	.999488	.002223	-.008933	1.00006	.99955
4.370	5.61495	1.999361	.002796	-.011368	.999640	.001604	-.006637	1.00004	.99968
4.450	5.77490	1.999552	.002010	-.008413	.999749	.001146	-.004879	1.00003	.99978
4.530	5.93487	1.999688	.001431	-.006162	.999827	.000812	-.003550	1.00002	.99984
4.610	6.09485	1.999785	.001068	-.004466	.999881	.000569	-.002557	1.00001	.99989
4.690	6.25484	1.999853	.000704	-.003204	.999919	.000395	-.001823	1.00001	.99993
4.770	6.41483	1.999900	.000487	-.002274	.999946	.000272	-.001286	1.00000	.99995
4.850	6.57482	1.999933	.000333	-.001598	.999964	.000185	-.000898	1.00000	.99997
4.930	6.73482	1.999955	.000226	-.001111	.999976	.000125	-.000621	1.00000	.99998
5.010	6.89482	1.999970	.000151	-.000765	.999985	.000084	-.000425	1.00000	.99998
5.090	7.05481	1.999980	.000101	-.000521	.999990	.000055	-.000288	1.00000	.99999
5.170	7.21481	1.999986	.000066	-.000351	.999994	.000036	-.000193	1.00000	.99999
5.250	7.37481	1.999991	.000043	-.000234	.999996	.000024	-.000128	1.00000	1.00000
5.330	7.53481	1.999993	.000027	-.000155	.999998	.000015	-.000084	1.00000	1.00000
5.410	7.69481	1.999995	.000017	-.000101	.999999	.000010	-.000055	1.00000	1.00000
5.490	7.85481	1.999996	.000011	-.000065	.999999	.000006	-.000035	1.00000	1.00000
5.570	8.01481	1.999997	.000007	-.000042	1.000000	.000004	-.000023	1.00000	1.00000
5.650	8.17481	1.999997	.000004	-.000026	1.000000	.000002	-.000014	1.00000	1.00000
5.810	8.49481	1.999998	.000001	-.000011	1.000000	.000001	-.000006	1.00000	1.00000
5.870	8.81481	1.999998	.000000	-.000004	1.000000	.000000	-.000002	1.00000	1.00000

TABLE VI.- $T_e/T_w = 0.5$, $f_w = -1.0$, $F_u = 1/3$

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/Δ_2	$\epsilon_1, \rho e^{i\epsilon}$
.000	-1.00000	.000000	.003556	.711247	-.031995	.006000	.167163	.089886	.000000	.000000	.000000
.005	-.999999	.007111	.711087	-.032030	.000837	.167623	.090186	.003555	.001780	.003556	.001780
.010	-.999996	.010665	.710926	-.032065	.001676	.168065	.090486	.007110	.007110	.007110	.007110
.015	-.999992	.014219	.710766	-.032100	.002518	.168518	.090786	.010655	.010655	.005333	.005333
.020	-.999986	.017771	.710605	-.032135	.003361	.168973	.091085	.014199	.007111	.007111	.007111
.025	-.999978	.021323	.710445	-.032170	.004207	.169429	.091385	.017733	.008889	.008889	.008889
.030	-.999968	.024842	.710284	-.032205	.005056	.169887	.091685	.021277	.010666	.010666	.010666
.040	-.999943	.028424	.709961	-.032276	.006759	.170807	.092284	.028333	.014211	.014211	.014211
.050	-.999911	.035522	.709638	-.032348	.008472	.171732	.092883	.035377	.017766	.017766	.017766
.060	-.999872	.042617	.709314	-.032419	.010194	.172664	.093481	.042400	.021311	.021311	.021311
.070	-.999826	.049708	.708990	-.032492	.011925	.173602	.094078	.049411	.024855	.024855	.024855
.080	-.999773	.056797	.708665	-.032565	.013666	.174546	.094575	.056411	.028340	.028340	.028340
.090	-.999712	.063882	.708339	-.032638	.015416	.175496	.095272	.063339	.031944	.031944	.031944
.110	-.999570	.078042	.707684	-.032786	.018945	.177413	.096461	.077330	.039020	.039020	.039020
.130	-.999400	.092189	.707027	-.032937	.022513	.179354	.097647	.091155	.046059	.046059	.046059
.150	-.999202	.106323	.706367	-.033090	.026119	.181319	.098829	.104933	.053116	.053116	.053116
.170	-.998975	.120444	.705703	-.033246	.029766	.183307	.100005	.118655	.060222	.060222	.060222
.190	-.998720	.134551	.705037	-.033405	.033452	.185319	.101175	.132300	.067288	.067288	.067288
.210	-.998437	.148615	.704367	-.033568	.037179	.187354	.102338	.145688	.074320	.074320	.074320
.250	-.997786	.16793	.703018	-.033903	.044755	.191494	.104642	.172840	.088840	.088840	.088840
.290	-.97022	.201886	.701655	-.034254	.052499	.195725	.106908	.199511	.102444	.102444	.102444
.330	-.96147	.232925	.700277	-.034622	.060414	.200046	.109131	.225899	.116466	.116466	.116466
.370	-.95159	.266908	.698885	-.035012	.068504	.204455	.111302	.251977	.130455	.130455	.130455
.410	-.94050	.288836	.697476	-.035424	.076772	.208949	.113414	.277775	.144442	.144442	.144442
.450	-.92848	.316706	.696050	-.035861	.085221	.213527	.115457	.303211	.158355	.158355	.158355
.530	-.90092	.372275	.693144	-.036826	.102677	.222920	.119302	.353116	.186144	.186144	.186144
.610	-.86893	.427607	.690155	-.037932	.120896	.232605	.122758	.401766	.213800	.213800	.213800
.690	-.83251	.482597	.687070	-.039211	.139901	.242548	.125734	.448933	.241355	.241355	.241355
.770	-.79170	.537535	.683875	-.040700	.159710	.252707	.128133	.494611	.268777	.268777	.268777
.850	-.74651	.592113	.680551	-.042440	.180338	.263031	.129848	.538722	.296066	.296066	.296066
.930	-.69697	.646120	.677077	-.044479	.201797	.273461	.130761	.581200	.323211	.323211	.323211
1.010	-.64310	.700441	.673425	-.046871	.224093	.283928	.130747	.621936	.350222	.350222	.350222
1.090	-.58491	.754162	.669566	-.049680	.247225	.294352	.129674	.660944	.377708	.377708	.377708
1.170	-.52244	.807565	.665464	-.052976	.271186	.304644	.127402	.698077	.403778	.403778	.403778
1.250	-.45571	.860629	.661075	-.056838	.295961	.314701	.123788	.733277	.430311	.430311	.430311
1.330	-.38475	.913328	.656352	-.061356	.324410	.321529	.118686	.766500	.456666	.456666	.456666

TABLE VI. - $T_e/T_w = 0.5$, $f_w = -1.0$, $Eu = 1/3$ - Continued

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	$\rho u/\rho_e u_e$
1.410	-30959	965635	651238	-06629	347854	333647	111954	.79768	.48282
1.490	-23026	1.017514	.645668	-.072766	.374896	.342276	.103455	.82678	.50876
1.570	-14680	1.068927	.639569	-.079885	.402598	.350150	.093062	.85375	.53446
1.650	-5924	1.119829	.632857	-.088113	.430895	.357113	.080671	.87856	.55991
1.730	.03236	1.170166	.625438	-.097579	.459708	.363002	.066203	.90120	.58508
1.810	.12797	1.219877	.617208	-.108414	.488942	.367649	.049616	.92165	.60994
1.890	.22752	1.268894	.608052	-.120741	.518494	.370884	.030916	.93994	.63445
1.970	.33097	1.317137	.597846	-.134667	.548242	.372541	.010171	.95508	.65857
2.050	.43824	1.364518	.586460	-.150267	.578054	.372461	-.012480	.97014	.68226
2.130	.54927	1.410936	.573758	-.167567	.607785	.370500	-.036809	.98216	.70547
2.210	.66396	1.456281	.559605	-.186525	.637280	.366535	-.062498	.99225	.72814
2.290	.78224	1.500431	.543874	-.207007	.666375	.360475	-.089121	1.00051	.75022
2.370	.20400	1.543255	.526451	-.228757	.694899	.352265	-.116150	1.00705	.77163
2.450	1.02912	1.584615	.507250	-.251383	.722680	.341898	-.142958	1.01203	.79231
2.530	1.15749	1.624366	.486221	-.274338	.749546	.329417	-.168834	1.01560	.81218
2.610	1.28997	1.662362	.463366	-.296916	.775333	.314930	-.193012	.83118	
2.690	1.4	342	1.698458	-.318271	.799886	.298602	-.214708	1.01917	.84923
2.770	1.5	3067	1.732518	-.337456	.823067	.280662	-.233169	1.01953	.86626
2.850	1.7	3057	1.764420	-.353482	.844757	.261398	-.247726	1.01917	.88221
2.930	1.4292	1.794063	.356054	-.365402	.864864	.241144	-.257853	1.01825	.89703
3.010	1.98755	1.821369	.326506	-.372408	.883324	.220268	-.263209	1.01694	.91068
3.090	2.13428	1.846295	.296614	-.373919	.900101	.199159	-.263684	1.01537	.92215
3.170	2.28290	1.86831	.266832	-.369656	.915194	.178204	-.259405	1.01366	.93442
3.250	2.43323	1.889004	.237620	-.359681	.928628	.157770	-.250731	1.01191	.94450
3.330	2.58508	1.906877	.209422	-.344400	.940460	.138188	-.238224	1.01021	.95344
3.410	2.73827	1.922549	.182637	-.324519	.950769	.119737	-.222600	1.00860	.96127
3.490	2.89263	1.936146	.157596	-.309972	.959654	.102633	-.204663	1.00713	.96807
3.570	3.04800	1.947818	.134550	-.274823	.967230	.087030	-.185247	1.00582	.97391
3.650	3.20423	1.957732	.113663	-.247170	.973621	.073012	-.165152	1.00469	.97887
3.730	3.36119	1.966063	.095015	-.219058	.978954	.060605	-.145097	1.00372	.98303
3.810	3.51877	1.972993	.078603	-.191407	.983359	.049780	-.125689	1.00291	.98550
3.890	3.67684	1.976697	.064358	-.164972	.986959	.040465	-.107402	1.00225	.98935
3.970	3.83533	1.983345	.052161	-.140321	.988871	.032558	-.090573	1.00172	.99167
4.050	3.99415	1.987093	.041851	-.117840	.992202	.025930	-.075412	1.00129	.99355
4.130	4.15324	1.990086	.033244	-.097745	.994050	.020446	-.062017	1.00096	.99504
4.210	4.31255	1.992452	.026147	-.080109	.995500	.015962	-.050391	1.00071	.99623

TABLE VI. - $T_e/T_w = 0.5$, $f_w = -1.0$, $E_u = 1/3$ - Concluded

η	α'	α''	α'''	α''''	θ	θ'	θ''	θ'''	u/u_e	p_e/p_{eue}
4.290	4.47202	1.994304	.020363	-.064891	.9966627	.012339	-.040468	1.000552	.99715	
4.370	4.63162	1.995740	.015704	-.051965	.997493	.009445	-.032128	1.00037	.99787	
4.450	4.79133	1.996842	.011993	-.041148	.998154	.007160	-.025223	1.00026	.99842	
4.530	4.95111	1.997680	.009071	-.032224	.998652	.005376	-.019584	1.00019	.99884	
4.610	5.11095	1.998310	.006794	-.024960	.999025	.003998	-.015042	1.00013	.99916	
4.690	5.27084	1.998781	.005039	-.019126	.999301	.002944	-.011431	1.00009	.99939	
4.770	5.43076	1.999128	.003701	-.014498	.999503	.002148	-.008594	1.00006	.99956	
4.850	5.55070	1.999382	.002692	-.010874	.999650	.001552	-.006395	1.00004	.99969	
4.930	5.75066	1.999565	.001939	-.008069	.999755	.001111	-.004709	1.00003	.99978	
5.010	5.91063	1.999697	.001383	-.005924	.999831	.000728	-.003431	1.00002	.99985	
5.090	6.07061	1.999791	.000977	-.004304	.999884	.000553	-.002475	1.00001	.99990	
5.170	6.23059	1.999857	.000684	-.003094	.999921	.000385	-.001767	1.00001	.99993	
5.250	6.39058	1.999903	.000473	-.002201	.999947	.000265	-.001249	1.00000	.99995	
5.330	6.55058	1.999934	.000325	-.001550	.999964	.000181	-.000874	1.00000	.99997	
5.410	6.71057	1.999956	.000220	-.001080	.999976	.000122	-.000605	1.00000	.99998	
5.490	6.87057	1.999970	.000148	-.000744	.999985	.000082	-.000415	1.00000	.99999	
5.570	7.03057	1.999980	.000099	-.000508	.999990	.000054	-.000281	1.00000	.99999	
5.650	7.19057	1.999986	.000065	-.000343	.999993	.000036	-.000189	1.00000	.99999	
5.730	7.35056	1.999991	.000042	-.000229	.999996	.000023	-.000126	1.00000	1.00000	
5.810	7.51056	1.999993	.000027	-.000151	.999997	.000015	-.000083	1.00000	1.00000	
5.890	7.67056	1.999995	.000017	-.000099	.999998	.000010	-.000054	1.00000	1.00000	
5.970	7.83056	1.999996	.000011	-.000064	.999999	.000006	-.000035	1.00000	1.00000	
6.050	7.99056	1.999997	.000007	-.000041	.999999	.000004	-.000022	1.00000	1.00000	
6.210	8.31056	1.999998	.000002	-.000017	1.000000	.000001	-.000009	1.00000	1.00000	
6.370	8.63056	1.999998	.000001	-.000007	1.000000	.000001	-.000003	1.00000	1.00000	
6.530	8.95056	1.999998	-.000000	-.000003	1.000000	-.000000	-.000001	1.00000	1.00000	

TABLE VII.— $T_e/T_w = 1.0$, $f_w = 0$, $\epsilon_u = 1/3$

γ	f	f^{11}	f^{111}	f^{1111}	θ	θ'	θ''	u/u_e	$\rho u/\rho_e u_e$
0.00	00000	0000000	757448	-333333	0000000	384156	-0000000	00000	00000
0.05	00001	003783	755781	-333333	001921	384156	-0000002	00378	00378
0.10	00004	007558	754115	-333333	003842	384156	-0000007	00756	00756
0.15	00009	011324	752448	-333333	005762	384156	-0000015	01132	01132
0.20	00015	015082	750781	-333333	007683	384156	-0000027	01508	01508
0.25	00024	018832	749115	-333333	009604	384156	-0000042	01883	01883
0.30	00034	022573	747448	-333333	011525	384155	-0000061	02257	02257
0.40	00060	030031	744115	-333332	015366	384155	-0000108	03003	03003
0.50	00094	037456	740781	-333330	019206	384153	-0000168	03746	03746
0.60	00135	044847	737448	-333327	023049	384151	-0000242	04485	04485
0.70	00184	052205	734115	-333324	026891	384148	-0000329	05220	05220
0.80	00240	059529	730782	-333319	030732	384145	-0000429	05953	05953
0.90	00303	066820	727448	-333313	034574	384140	-0000543	06682	06682
1.10	00451	081303	720782	-333296	042256	384126	-0000808	08130	08130
1.30	00628	095652	714117	-333273	049939	384107	-001125	09565	09565
1.50	00833	109867	707451	-333240	057621	384081	-001494	10987	10987
1.70	01067	123950	700787	-333198	065302	384047	-001913	12395	12395
1.90	01329	137899	694124	-333145	072982	384004	-002382	13790	13790
2.10	01619	151715	687461	-333080	080662	383951	-002900	15171	15171
2.50	02280	178947	6674141	-332907	096017	383812	-004084	17895	17895
2.90	03050	205646	6660830	-332672	111366	383622	-005459	20565	20565
3.30	03925	231813	647529	-332363	126706	383373	-007022	23181	23181
3.70	04903	257449	634242	-331973	142035	383058	-008765	25745	25745
4.10	05984	282553	620972	-331492	157350	382669	-010685	28255	28255
4.50	07163	307127	607724	-330912	172648	382201	-012776	30713	30713
5.30	09812	354687	581307	-329423	203178	380996	-017445	35469	35469
6.10	12832	400139	555029	-327445	233596	379393	-022720	40014	40014
6.90	16208	443496	528930	-324924	263869	377346	-028542	44350	44350
7.70	19923	484774	503057	-321814	293959	374814	-034848	48477	48477
8.50	23959	522993	477457	-318074	323825	371760	-041566	52399	52399
9.30	28301	561176	452182	-313676	353426	368154	-048623	56118	56118
1.010	32933	596352	427267	-308600	382715	363973	-055938	59635	59635
1.090	37838	629554	402825	-321834	411646	359199	-063426	62955	62955
1.170	43000	660817	378852	-296379	440171	353823	-071001	66082	66082
1.250	48406	690184	355422	-289245	468241	347839	-078575	69018	69018
1.330	54038	717701	332590	-281453	495809	341253	-086057	71770	71770

TABLE VII.- $T_e/T_{ir} = 1.0$, $f_{ir} = 0$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	u/u_e	mu/mue
1.010	59084	743416	310406	-273034	522826	334075	-093360	74342	74342	74342
1.090	65928	767384	288920	-264028	549246	326323	-100398	76738	76738	76738
1.070	72158	789663	268176	-254484	575023	318921	-107089	78966	78966	78966
1.0650	78559	810313	248216	-244461	600115	309200	-113355	81031	81031	81031
1.0730	85119	829399	229074	-234022	624482	299897	-119125	82940	82940	82940
1.0810	91825	846988	210781	-223237	648087	290155	-124336	84699	84699	84699
1.0890	98667	863148	193363	-212182	670896	280019	-128933	86315	86315	86315
1.0970	1.05632	8777950	176837	-200933	692881	269543	-132871	87795	87795	87795
2.050	1.12710	881466	161217	-189568	714015	258779	-136113	89147	89147	89147
2.130	1.19892	903769	146507	-178168	734279	247784	-138634	90377	90377	90377
2.210	1.27168	914931	132709	-166809	753656	236617	-140420	91493	91493	91493
2.290	1.34528	925026	119815	-155565	772135	225336	-141466	92503	92503	92503
2.370	1.41965	934125	107813	-144508	789709	214002	-141777	93413	93413	93413
2.450	1.49472	942200	096687	-133793	806375	202671	-141370	94230	94230	94230
2.530	1.57040	949618	086413	-123240	822138	191401	-140269	94962	94962	94962
2.610	1.64663	956148	076964	-113081	837003	180246	-138506	95615	95615	95615
2.690	1.72336	961953	068309	-103362	850981	169257	-136122	96195	96195	96195
2.770	1.80053	967097	060414	-094092	864089	158481	-133164	96710	96710	96710
2.850	1.87808	971639	053241	-085300	876245	147964	-129682	97164	97164	97164
2.930	1.95598	975634	046752	-077010	887772	137745	-125732	97563	97563	97563
3.010	2.03417	979136	040906	-069237	898393	127858	-121373	97914	97914	97914
3.090	2.11263	982195	035660	-061989	908239	118334	-116665	98220	98220	98220
3.170	2.19131	984857	030974	-055268	917337	109199	-111669	98486	98486	98486
3.250	2.27019	987165	026804	-049068	925721	100474	-106444	98716	98716	98716
3.330	2.34925	989158	023109	-043381	933424	92173	-101051	98916	98916	98916
3.410	2.42845	990874	019849	-038192	940481	884308	-095545	99087	99087	99087
3.490	2.50778	992345	016986	-033482	946926	076887	-089981	99234	99234	99234
3.570	2.58722	993601	014480	-029228	952794	069912	-084409	99360	99360	99360
3.650	2.66675	994670	012298	-025407	958123	063381	-078876	99467	99467	99467
3.810	2.82604	996341	008769	-018956	967301	051630	-068090	99634	99634	99634
3.970	2.98556	997525	006158	-013905	974734	041560	-057904	99752	99752	99752
4.130	3.14523	998349	004258	-010028	980684	033058	-048522	99835	99835	99835
4.290	3.30502	998916	002898	-007108	985389	025984	-049076	99892	99892	99892
4.450	3.46487	999299	001942	-004953	989066	020182	-032632	99930	99930	99930
4.610	3.62478	999554	001281	-003393	991905	015489	-026200	99955	99955	99955
4.770	3.78473	999720	000831	-002284	994072	011746	-020746	99972	99972	99972

TABLE VII.- $T_e/T_w = 1.0$, $f_w = 0$, $E_u = 1/3$ - Concluded

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	p_{11}/p_{00e}
4.930	3.94469	999828	0000531	-001511	995706	008802	-016204	99983	99983		
5.090	4.10467	999896	0000334	-000983	996924	006518	-012485	99990	99990		
5.250	4.26466	999939	0000207	-000628	997821	004769	-009491	99994	99994		
5.410	4.42465	999965	0001126	-000394	998473	003448	-007119	99996	99996		
5.570	4.58464	999981	000075	-000243	998942	002463	-005269	99998	99998		
5.730	4.74464	999990	000045	-000147	999275	001738	-003849	99999	99999		
5.890	4.90464	999996	000026	-000088	999509	001212	-002775	1.00000	1.00000		
6.050	5.06464	999999	000015	-000051	999671	000836	-001975	1.00000	1.00000		
6.210	5.22464	1.00001	000009	-000029	999782	000569	-001387	1.00000	1.00000		
6.370	5.38464	1.00002	000005	-000016	999858	000383	-000962	1.00000	1.00000		
6.530	5.54464	1.00003	000003	-000009	999908	000254	-000658	1.00000	1.00000		
6.690	5.70464	1.00003	000002	-000005	999941	000167	-000445	1.00000	1.00000		
6.850	5.86464	1.00003	000001	-000003	999963	000108	-000297	1.00000	1.00000		
7.010	6.02464	1.00003	000001	-000001	999977	000069	-000195	1.00000	1.00000		
7.170	6.18464	1.00004	000001	-000001	999986	000044	-000127	1.00000	1.00000		
7.330	6.34464	1.00004	000001	-000000	999992	000027	-000081	1.00000	1.00000		
7.490	6.50464	1.00004	000001	-000000	999995	000017	-000052	1.00000	1.00000		
7.650	6.66465	1.00004	000001	-000000	999997	000010	-000032	1.00000	1.00000		
7.810	6.82465	1.00004	000001	-000000	999999	000006	-000020	1.00000	1.00000		
7.970	6.98465	1.00004	000001	-000000	999999	000004	-000012	1.00000	1.00000		
8.130	7.14465	1.00004	000001	-000000	999999	000002	-000007	1.00000	1.00000		

TABLE VIII.- $T_e/T_W = 1.0$, $T_W = -0.5$, $E_u = 1/3$

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η	f	f'	f''	f'''	$f^{(4)}$	θ	θ'	θ''	θ'''	$\theta^{(4)}$	$\theta^{(5)}$
0.00	-0.50000	0.00000	0.574513	-0.141829	0.000000	0.241982	0.056462	0.00000	0.00000	0.00000	0.00000
0.05	-0.49999	0.002871	0.573803	-0.142066	0.001212	0.242264	0.056528	0.00287	0.00287	0.00287	0.00287
0.10	-0.49997	0.005738	0.573092	-0.142303	0.002423	0.242547	0.056591	0.00574	0.00574	0.00574	0.00574
0.15	-0.49994	0.008602	0.572380	-0.142540	0.003636	0.242830	0.056653	0.00860	0.00860	0.00860	0.00860
0.20	-0.49989	0.011462	0.571667	-0.142778	0.004851	0.243114	0.056714	0.01146	0.01146	0.01146	0.01146
0.25	-0.49982	0.014318	0.570952	-0.143016	0.006067	0.243398	0.056772	0.01432	0.01432	0.01432	0.01432
0.30	-0.49974	0.017171	0.570237	-0.143254	0.007285	0.243682	0.056830	0.01717	0.01717	0.01717	0.01717
0.40	-0.49954	0.022867	0.568802	-0.143732	0.009725	0.244250	0.056940	0.02287	0.02287	0.02287	0.02287
0.50	-0.49928	0.028547	0.567362	-0.144211	0.012170	0.244820	0.057043	0.02855	0.02855	0.02855	0.02855
0.60	-0.49897	0.034214	0.565918	-0.144692	0.014621	0.245391	0.057140	0.03421	0.03421	0.03421	0.03421
0.70	-0.49860	0.039866	0.564468	-0.145174	0.017078	0.245963	0.057231	0.03987	0.03987	0.03987	0.03987
0.80	-0.49817	0.045503	0.563014	-0.145657	0.019540	0.246536	0.057315	0.04550	0.04550	0.04550	0.04550
0.90	-0.49769	0.051126	0.561555	-0.146142	0.022008	0.247109	0.057393	0.05113	0.05113	0.05113	0.05113
1.10	-0.49656	0.062328	0.558623	-0.147114	0.026962	0.248259	0.057528	0.06233	0.06233	0.06233	0.06233
1.30	-0.49520	0.073471	0.555671	-0.148089	0.031939	0.249410	0.057637	0.07347	0.07347	0.07347	0.07347
1.50	-0.49362	0.084554	0.552699	-0.149069	0.036939	0.250564	0.057719	0.08455	0.08455	0.08455	0.08455
1.70	-0.49182	0.095579	0.549708	-0.150051	0.041961	0.251719	0.057773	0.09558	0.09558	0.09558	0.09558
1.90	-0.48979	0.106543	0.546697	-0.151037	0.047007	0.252875	0.057800	0.10654	0.10654	0.10654	0.10654
2.10	-0.48755	0.117446	0.543666	-0.152024	0.052076	0.254031	0.057798	0.11745	0.11745	0.11745	0.11745
2.50	-0.48242	0.139071	0.537546	-0.154003	0.062284	0.256341	0.057710	0.13907	0.13907	0.13907	0.13907
2.90	-0.47643	0.160449	0.531346	-0.155985	0.072584	0.258646	0.057506	0.16045	0.16045	0.16045	0.16045
3.30	-0.46959	0.181577	0.525067	-0.157965	0.082975	0.260940	0.057183	0.18158	0.18158	0.18158	0.18158
3.70	-0.46191	0.202453	0.518709	-0.159940	0.093459	0.263219	0.056739	0.20245	0.20245	0.20245	0.20245
4.10	-0.45340	0.223073	0.512272	-0.161904	0.104033	0.265478	0.056171	0.22307	0.22307	0.22307	0.22307
4.50	-0.44407	0.243434	0.505757	-0.163853	0.114696	0.267711	0.055478	0.24343	0.24343	0.24343	0.24343
5.30	-0.42299	0.283366	0.492494	-0.167688	0.136289	0.272082	0.053707	0.28337	0.28337	0.28337	0.28337
6.10	-0.39876	0.322225	0.478930	-0.171406	0.158225	0.276290	0.051414	0.32222	0.32222	0.32222	0.32222
6.90	-0.37146	0.359987	0.465074	-0.174965	0.180490	0.280294	0.048589	0.35999	0.35999	0.35999	0.35999
7.70	-0.34119	0.396629	0.450941	-0.178324	0.203066	0.284050	0.045227	0.39663	0.39663	0.39663	0.39663
8.50	-0.30803	0.432131	0.436548	-0.181441	0.225930	0.287516	0.041330	0.43213	0.43213	0.43213	0.43213
9.30	-0.27208	0.466471	0.421918	-0.184272	0.249059	0.290649	0.036904	0.46647	0.46647	0.46647	0.46647
1.010	-0.23343	0.499632	0.407074	-0.186775	0.272424	0.293407	0.031962	0.49963	0.49963	0.49963	0.49963
1.090	-0.19217	0.531598	0.392044	-0.188909	0.295993	0.295749	0.026523	0.53160	0.53160	0.53160	0.53160
1.170	-0.14840	0.562355	0.376859	-0.190634	0.319732	0.297638	0.020613	0.56235	0.56235	0.56235	0.56235
1.250	-0.10223	0.591892	0.361554	-0.191915	0.343602	0.299036	0.014266	0.59189	0.59189	0.59189	0.59189
1.330	-0.05373	0.620201	0.346165	-0.192716	0.367564	0.299910	0.007520	0.62020	0.62020	0.62020	0.62020

TABLE VIII.- $T_e/T_w = 1.0$, $f_{--} = -0.5$, $M_1 = 1/3$ - Continued

η	f	f'	f''	f'''	f''''	θ'	θ''	u/u_e	$\rho u/\rho e u_e$
1.0410	-0.0303	0.647277	0.330733	-0.193010	0.391573	0.300230	0.00424	0.64728	0.64728
1.0490	0.04980	0.673118	0.315298	-0.192771	0.415585	0.299970	-0.006971	0.67312	0.67312
1.0570	0.10464	0.697726	0.299904	-0.191981	0.439552	0.299108	-0.014606	0.69773	0.69773
1.0650	0.16140	0.721105	0.284596	-0.190625	0.463426	0.297628	-0.022417	0.72111	0.72111
1.0730	0.21998	0.743265	0.269419	-0.188698	0.487156	0.295518	-0.030338	0.74326	0.74326
1.0810	0.28029	0.764217	0.254429	-0.186198	0.510692	0.292773	-0.038295	0.76422	0.76422
1.0890	0.34223	0.783978	0.239643	-0.183134	0.533983	0.289392	-0.046218	0.78398	0.78398
1.0970	0.40570	0.802567	0.225133	-0.179519	0.556978	0.285381	-0.054030	0.80257	0.80257
2.0050	0.47061	0.820008	0.210934	-0.175374	0.579627	0.280752	-0.061658	0.82001	0.82001
2.0130	0.53687	0.836326	0.197087	-0.170726	0.601882	0.275523	-0.069029	0.83633	0.83633
2.0210	0.60439	0.851552	0.183630	-0.165609	0.623695	0.269716	-0.076073	0.85155	0.85155
2.0290	0.67309	0.865718	0.170600	-0.160063	0.645022	0.263362	-0.082724	0.86572	0.86572
2.0370	0.74288	0.878860	0.158030	-0.154133	0.665820	0.256493	-0.088920	0.87886	0.87886
2.0450	0.81368	0.891016	0.145948	-0.147867	0.686048	0.249148	-0.094606	0.89102	0.89102
2.0530	0.88541	0.902226	0.134379	-0.141317	0.705672	0.241371	-0.099733	0.90223	0.90223
2.0610	0.95801	0.912531	0.123343	-0.134539	0.724657	0.233207	-0.104260	0.91253	0.91253
2.0690	1.03140	0.921975	0.112857	-0.127588	0.742976	0.224706	-0.108155	0.92198	0.92198
2.0770	1.10551	0.930603	0.102933	-0.120521	0.760603	0.215919	-0.111393	0.93060	0.93060
2.0850	1.18027	0.938459	0.093576	-0.113395	0.777517	0.206901	-0.113960	0.93846	0.93846
2.0930	1.25564	0.945590	0.084790	-0.106263	0.793702	0.197704	-0.115848	0.94559	0.94559
3.0010	1.33155	0.952041	0.076572	-0.099179	0.809146	0.188383	-0.117059	0.95204	0.95204
3.0090	1.40795	0.957857	0.068918	-0.092192	0.823841	0.178992	-0.117605	0.95786	0.95786
3.0170	1.48479	0.963083	0.061818	-0.085348	0.837784	0.169583	-0.117505	0.96308	0.96308
3.0250	1.56203	0.967762	0.055258	-0.078688	0.850976	0.160208	-0.116783	0.96776	0.96776
3.0330	1.63962	0.971938	0.049222	-0.072249	0.863420	0.150914	-0.115473	0.97194	0.97194
3.0410	1.71753	0.975651	0.043691	-0.066062	0.875125	0.141747	-0.113612	0.97565	0.97565
3.0490	1.79571	0.978941	0.038644	-0.060154	0.886104	0.132749	-0.112444	0.97894	0.97894
3.0570	1.87415	0.981846	0.034059	-0.054546	0.896371	0.123960	-0.108416	0.98185	0.98185
3.0650	1.95280	0.984402	0.029909	-0.049254	0.905944	0.115414	-0.105177	0.98440	0.98440
3.0730	2.03164	0.986643	0.026169	-0.044290	0.914844	0.107141	-0.101581	0.98664	0.98664
3.0810	2.11062	0.988600	0.022813	-0.039658	0.923095	0.099169	-0.097679	0.98860	0.98860
3.0890	2.18981	0.990302	0.019815	-0.035361	0.930720	0.091519	-0.093525	0.99030	0.99030
3.0970	2.26910	0.991779	0.017147	-0.031397	0.937747	0.084210	-0.089171	0.99178	0.99178
4.0050	2.34849	0.993054	0.014783	-0.027759	0.944203	0.077256	-0.084670	0.99305	0.99305
4.0210	2.50755	0.995092	0.010865	-0.021426	0.955519	0.064447	-0.075415	0.99509	0.99509
4.0370	2.66689	0.996579	0.007865	-0.016260	0.964905	0.053126	-0.061118	0.99658	0.99658

TABLE VIII.- $T_e/f_{IW} = 1.0$, $f_W = -0.5$, $\bar{u} = 1/3$ - Concluded

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	u/u_e	u/u_{pe}
4.530	2.82643	0.997648	0.005607	-0.012131	0.972598	0.43275	-0.057080	0.99765	0.99765	0.99765
4.690	2.98612	0.998405	0.003936	-0.008898	0.976828	0.034834	-0.048542	0.99840	0.99840	0.99840
4.850	3.14591	0.998932	0.002720	-0.006415	0.983814	0.27707	-0.040677	0.99893	0.99893	0.99893
5.010	3.30577	0.999293	0.001850	-0.004547	0.987757	0.021777	-0.033595	0.99929	0.99929	0.99929
5.170	3.46568	0.999538	0.001238	-0.003168	0.990839	0.016913	-0.027354	0.99954	0.99954	0.99954
5.330	3.62562	0.999700	0.000815	-0.002170	0.993219	0.012980	-0.021961	0.9970	0.9970	0.9970
5.490	3.78558	0.999806	0.000528	-0.001461	0.995035	0.009843	-0.017388	0.9981	0.9981	0.9981
5.650	3.94555	0.999874	0.000336	-0.000966	0.996404	0.007375	-0.013580	0.9987	0.9987	0.9987
5.810	4.10554	0.999917	0.000209	-0.000628	0.997424	0.005461	-0.010462	0.9992	0.9992	0.9992
5.970	4.26553	0.999944	0.000128	-0.000402	0.998175	0.003995	-0.007953	0.9994	0.9994	0.9994
6.130	4.42552	0.999960	0.000076	-0.000252	0.998722	0.002888	-0.005965	0.9996	0.9996	0.9996
6.290	4.58551	0.999969	0.000044	-0.000155	0.999115	0.002063	-0.004415	0.9997	0.9997	0.9997
6.450	4.74551	0.999975	0.000024	-0.000094	0.999394	0.001456	-0.003225	0.9997	0.9997	0.9997
6.610	4.90550	0.999978	0.000013	-0.000056	0.999590	0.001016	-0.002325	0.9998	0.9998	0.9998
6.770	5.06550	0.999979	0.000006	-0.000033	0.999725	0.000700	-0.001654	0.9998	0.9998	0.9998
6.930	5.22550	0.999980	0.000001	-0.000019	0.999819	0.000476	-0.001162	0.9998	0.9998	0.9998
7.090	5.38549	0.999980	-0.000001	-0.000011	0.999882	0.000320	-0.000805	0.9998	0.9998	0.9998
7.250	5.54549	0.999979	-0.000002	-0.000006	0.999924	0.000213	-0.000551	0.9998	0.9998	0.9998
7.410	5.70549	0.999979	-0.000003	-0.000003	0.999952	0.000140	-0.000372	0.9998	0.9998	0.9998
7.570	5.86548	0.999978	-0.000003	-0.000002	0.999970	0.000091	-0.000248	0.9998	0.9998	0.9998
7.730	6.02548	0.999978	-0.000003	-0.000001	0.999982	0.000058	-0.000163	0.9998	0.9998	0.9998
7.890	6.18548	0.999977	-0.000004	-0.000000	0.999989	0.000037	-0.000106	0.9998	0.9998	0.9998
8.050	6.34547	0.999977	-0.000004	-0.000000	0.999994	0.000023	-0.000068	0.9998	0.9998	0.9998
8.210	6.50547	0.999976	-0.000004	-0.000000	0.999997	0.000014	-0.000043	0.9998	0.9998	0.9998
8.370	6.66547	0.999976	-0.000004	-0.000000	0.999999	0.000009	-0.000027	0.9998	0.9998	0.9998
8.530	6.82546	0.999975	-0.000004	-0.000000	1.000000	0.000005	-0.000017	0.9998	0.9998	0.9998
8.690	6.98546	0.999974	-0.000004	-0.000000	1.000000	0.000003	-0.000010	0.9997	0.9997	0.9997
9.010	7.30545	0.999973	-0.000004	-0.000000	1.000001	0.000001	-0.000004	0.9997	0.9997	0.9997

TABLE IX. - $T_e/T_w = 1$, $f_w = -1.0$, $F_u = 1/3$

η	r'	r''	r'''	r''''	θ	θ'	θ''	u/u_e	$\rho u/\rho e u_e$
0.00	1.00000	0.00000	0.428720	-0.047520	0.00000	0.131417	0.061328	0.00000	0.00000
0.05	-0.99999	0.002143	0.428482	-0.047679	0.000658	0.131724	0.061471	0.00214	0.00214
0.10	-0.99998	0.004285	0.428243	-0.047838	0.001317	0.132032	0.061613	0.00428	0.00428
0.15	-0.99995	0.006425	0.428004	-0.047998	0.001978	0.132340	0.061756	0.00643	0.00643
0.20	-0.99991	0.008565	0.427763	-0.048158	0.002641	0.132649	0.061898	0.00856	0.00856
0.25	-0.99987	0.010703	0.427522	-0.048319	0.003305	0.132959	0.062039	0.01070	0.01070
0.30	-0.99981	0.012840	0.427280	-0.048480	0.003970	0.133270	0.062181	0.01284	0.01284
0.40	-0.99966	0.017110	0.426794	-0.048804	0.005306	0.133893	0.062462	0.01711	0.01711
0.50	-0.99947	0.021376	0.426304	-0.049130	0.006648	0.134519	0.062742	0.02138	0.02138
0.60	-0.99923	0.025637	0.425811	-0.049459	0.007996	0.135148	0.063020	0.02564	0.02564
0.70	-0.99895	0.029892	0.425315	-0.049789	0.009351	0.135779	0.063297	0.02989	0.02989
0.80	-0.99863	0.034143	0.424815	-0.050122	0.010712	0.136414	0.063573	0.03414	0.03414
0.90	-0.99827	0.038388	0.424312	-0.050457	0.012079	0.137051	0.063846	0.03839	0.03839
1.10	-0.99742	0.046865	0.423296	-0.051133	0.014833	0.138333	0.064389	0.04686	0.04686
1.30	-0.99640	0.055320	0.422267	-0.051817	0.017613	0.139626	0.064924	0.05532	0.05532
1.50	-0.99520	0.063755	0.421224	-0.052509	0.020418	0.140930	0.065452	0.06376	0.06376
1.70	-0.99385	0.072169	0.420167	-0.053210	0.023250	0.142244	0.065972	0.07217	0.07217
1.90	-0.99232	0.080562	0.419095	-0.053920	0.026108	0.143569	0.066484	0.08056	0.08056
2.10	-0.99062	0.088933	0.418010	-0.054637	0.028993	0.144904	0.066988	0.08893	0.08893
2.50	-0.98673	0.105609	0.415795	-0.055097	0.034843	0.147603	0.067967	0.10561	0.10561
2.90	-0.98218	0.122196	0.413522	-0.057589	0.040802	0.150340	0.068908	0.12220	0.12220
3.30	-0.97696	0.138690	0.411188	-0.059113	0.046871	0.153115	0.069807	0.13869	0.13869
3.70	-0.97108	0.155090	0.406792	-0.060669	0.053051	0.155924	0.070660	0.15509	0.15509
4.10	-0.96455	0.171393	0.406334	-0.062255	0.059345	0.158767	0.071465	0.17139	0.17139
4.50	-0.95737	0.187596	0.403811	-0.063871	0.065753	0.161641	0.072217	0.18760	0.18760
5.30	-0.94108	0.219693	0.398570	-0.067189	0.078917	0.167473	0.073549	0.21969	0.21969
6.10	-0.92223	0.251360	0.393058	-0.070612	0.092551	0.173402	0.074628	0.25136	0.25136
6.90	-0.90087	0.282575	0.387269	-0.074131	0.106663	0.179406	0.075423	0.28257	0.28257
7.70	-0.87703	0.313315	0.381195	-0.07731	0.121258	0.185461	0.075906	0.31332	0.31332
8.50	-0.85075	0.343558	0.374830	-0.081397	0.136338	0.191542	0.076046	0.34356	0.34356
9.30	-0.82208	0.373280	0.368170	-0.085111	0.151904	0.197619	0.075811	0.37328	0.37328
1.090	-0.75770	0.431066	0.353954	-0.092600	0.184488	0.209637	0.074126	0.43107	0.43107
1.250	-0.68426	0.486482	0.338543	-0.100011	0.218966	0.221244	0.070648	0.48648	0.48648
1.410	-0.60216	0.539338	0.321967	-0.107121	0.255248	0.232141	0.065233	0.53934	0.53934
1.570	-0.51182	0.589452	0.304293	-0.113686	0.293196	0.242011	0.057004	0.58945	0.58945
1.730	-0.41369	0.636659	0.285630	-0.119447	0.332619	0.250531	0.048367	0.63666	0.63666

TABLE IX.- $T_e/T_w = 1$, $f_w = -1.0$, $\text{Eu} = 1/3$ - Continued

η	Γ	Γ'	Γ''	Γ'''	Γ''''	θ	θ'	θ''	u_{\perp}/u_{\parallel}	$\mu_{\perp}/\mu_{\parallel}$
1.890	-30.825	680809	266127	-124143	373277	257387	037025	68081	0.68081	0.68081
2.050	-19.600	721785	245973	-127535	414878	262290	023991	72178	0.72178	0.72178
2.210	-0.7746	759499	225396	-129415	457092	264992	009578	75950	0.75950	0.75950
2.370	0.4686	793903	204649	-129633	499548	265304	-0.005802	79390	0.79390	0.79390
2.530	0.17642	824992	184006	-128104	541855	263110	-0.021661	82499	0.82499	0.82499
2.690	0.31068	852806	163748	-124823	583608	258376	-0.037461	85281	0.85281	0.85281
2.850	0.44914	877428	144151	-119870	624403	251156	-0.052642	87743	0.87743	0.87743
3.010	0.59130	898984	125470	-113403	663853	241592	-0.066665	89898	0.89898	0.89898
3.170	0.73667	917639	107930	-105652	701600	229911	-0.079038	91764	0.91764	0.91764
3.330	0.88480	933592	91714	-096901	737329	216409	-0.089356	93359	0.93359	0.93359
3.490	1.03528	947066	947066	-087471	770774	201441	-0.097323	94707	0.94707	0.94707
3.650	1.18774	958301	958301	-063742	801734	185399	-0.102763	95830	0.95830	0.95830
3.810	1.34183	967547	952098	-067889	830067	168693	-0.105633	96755	0.96755	0.96755
3.970	1.49726	975054	042004	-058351	855702	151728	-0.106016	97505	0.97505	0.97505
4.130	1.65377	981067	033499	-049326	878628	134889	-0.104102	98107	0.98107	0.98107
4.290	1.81114	985815	026184	-041004	898892	118521	-0.100174	98582	0.98582	0.98582
4.450	1.96918	989512	020234	-033518	916596	102921	-0.094579	98951	0.98951	0.98951
4.610	2.12774	992350	015410	-026940	931881	088324	-0.087701	99235	0.99235	0.99235
4.770	2.28669	994495	011565	-021290	944922	074904	-0.079932	99450	0.99450	0.99450
4.930	2.44594	996094	008551	-016541	955918	062773	-0.071652	99609	0.99609	0.99609
5.090	2.60542	997268	006227	-012635	965080	051985	-0.063206	99727	0.99727	0.99727
5.250	2.76505	998117	004467	-009489	972624	042541	-0.054893	99812	0.99812	0.99812
5.410	2.92480	998721	003156	-007005	978762	034400	-0.046953	99872	0.99872	0.99872
5.570	3.08463	999145	002196	-005084	983697	027487	-0.039568	99915	0.99915	0.99915
5.730	3.24452	999438	001504	-003628	987618	021703	-0.032861	99944	0.99944	0.99944
5.890	3.40445	999638	001015	-002544	990696	016933	-0.026902	99964	0.99964	0.99964
6.050	3.56440	999771	000674	-001754	993083	013054	-0.021714	99977	0.99977	0.99977
6.210	3.72437	999859	000441	-001189	994914	009945	-0.017284	99986	0.99986	0.99986
6.370	3.88436	999917	000284	-000792	996300	007486	-0.013570	99992	0.99992	0.99992
6.530	4.04435	999953	000181	-000518	997338	005568	-0.010509	99995	0.99995	0.99995
6.690	4.20434	999976	000113	-000333	998105	004092	-0.008029	99998	0.99998	0.99998
6.850	4.36434	999991	000070	-000211	998666	002972	-0.006053	99999	0.99999	0.99999
7.010	4.52434	1.000000	000043	-000131	999072	002133	-0.004503	1.00000	1.00000	1.00000
7.170	4.68434	1.000005	000027	-000080	999361	001512	-0.003306	1.00001	1.00001	1.00001
7.330	4.84434	1.000009	000017	-000048	999564	001059	-0.002395	1.00001	1.00001	1.00001
7.490	5.00434	1.000011	0.000011	-0.000233	999707	0.000733	-0.001713	1.00001	1.00001	1.00001

TABLE IX. - $T_e/T_W = 1$, $T'_W = -1.0$, $E_u = 1/3$ - Concluded

η	f	f'	f''	f'''	θ	θ'	θ''	θ'''	u/u_e	mu/m_e
7.650	5.16434	1.000012	0.000007	-0.00016	0.999804	0.000502	-0.001209	1.00001	1.00001	1.00001
7.810	5.32434	1.000013	0.000005	-0.00009	0.999871	0.000339	-0.000842	1.00001	1.00001	1.00001
7.970	5.48435	1.000014	0.000004	-0.00005	0.999916	0.000226	-0.000579	1.00001	1.00001	1.00001
8.130	5.64435	1.000015	0.000003	-0.00003	0.999945	0.000149	-0.000393	1.00001	1.00001	1.00001
8.290	5.80435	1.000015	0.000003	-0.00001	0.999965	0.000097	-0.000264	1.00002	1.00002	1.00002
8.450	5.96435	1.000016	0.000003	-0.00001	0.999977	0.000063	-0.000174	1.00002	1.00002	1.00002
8.610	6.12436	1.000016	0.000003	-0.00000	0.999985	0.000040	-0.000114	1.00002	1.00002	1.00002
8.770	6.28436	1.000016	0.000003	-0.00000	0.999991	0.000025	-0.000073	1.00002	1.00002	1.00002
8.930	6.44436	1.000017	0.000003	-0.00000	0.999994	0.000016	-0.000047	1.00002	1.00002	1.00002
9.090	6.60436	1.000017	0.000003	-0.00000	0.999996	0.000010	-0.000029	1.00002	1.00002	1.00002
9.250	6.76437	1.000018	0.000003	-0.00000	0.999997	0.000006	-0.000018	1.00002	1.00002	1.00002
9.410	6.92437	1.000018	0.000003	-0.00000	0.999998	0.000003	-0.000011	1.00002	1.00002	1.00002
9.670	7.24437	1.000019	0.000003	-0.00000	0.999998	0.000001	-0.000004	1.00002	1.00002	1.00002

TABLE X.- $T_e/T_w = 2$, $f_w = 0$, $E_u = 1/3$

γ	Γ	Γ'	Γ''	Γ'''	θ	θ'	θ''	θ'''	v_{∞}	v_{∞}/ρ_{∞}	$\rho_{\infty}/\rho_{\infty}$
0.000	0.00000	0.00000	0.589198	-0.759448	0.000000	0.372623	-0.118021	0.00000	0.00000	0.00000	0.00000
0.005	0.00001	0.002937	0.585417	-0.753034	0.001862	0.372034	-0.117431	0.00294	0.00294	0.00587	0.00587
0.010	0.00003	0.005854	0.581668	-0.745696	0.003720	0.371448	-0.116848	0.00588	0.00588	0.01171	0.01171
0.015	0.00007	0.008753	0.577950	-0.740434	0.005576	0.370866	-0.116273	0.00880	0.00880	0.01751	0.01751
0.020	0.00012	0.011634	0.574263	-0.734245	0.007429	0.370286	-0.115705	0.01172	0.01172	0.02327	0.02327
0.025	0.00018	0.014496	0.570608	-0.728129	0.009279	0.369709	-0.115145	0.01463	0.01463	0.02899	0.02899
0.030	0.00026	0.017340	0.566982	-0.722085	0.011126	0.369134	-0.114591	0.01753	0.01753	0.03468	0.03468
0.040	0.00046	0.022974	0.559821	-0.710207	0.014812	0.367994	-0.113505	0.02331	0.02331	0.04595	0.04595
0.050	0.00072	0.028537	0.552777	-0.698603	0.018486	0.366864	-0.112446	0.02906	0.02906	0.05707	0.05707
0.060	0.00103	0.034030	0.545848	-0.687263	0.022149	0.365745	-0.111414	0.03478	0.03478	0.06806	0.06806
0.070	0.00140	0.039454	0.539031	-0.676181	0.025801	0.364636	-0.110407	0.04047	0.04047	0.07891	0.07891
0.080	0.00182	0.044811	0.532323	-0.665348	0.029442	0.363537	-0.109426	0.04613	0.04613	0.08962	0.08962
0.090	0.00230	0.050101	0.525723	-0.654757	0.033072	0.362447	-0.108468	0.05176	0.05176	0.10020	0.10020
0.110	0.00240	0.060486	0.512834	-0.634271	0.040299	0.360296	-0.106625	0.06292	0.06292	0.12097	0.12097
0.130	0.00472	0.070617	0.500346	-0.614669	0.047484	0.358182	-0.104871	0.07397	0.07397	0.14123	0.14123
0.150	0.00623	0.080502	0.488242	-0.595902	0.054627	0.356101	-0.103203	0.08490	0.08490	0.16100	0.16100
0.170	0.00793	0.090149	0.476505	-0.577920	0.061728	0.354053	-0.101616	0.09571	0.09571	0.18030	0.18030
0.190	0.00983	0.099565	0.465120	-0.560682	0.068789	0.352036	-0.100106	0.10641	0.10641	0.19913	0.19913
0.210	0.01191	0.108756	0.454073	-0.544147	0.075810	0.350048	-0.098669	0.11700	0.11700	0.21751	0.21751
0.250	0.01642	0.126492	0.432938	-0.513033	0.089733	0.346156	-0.096001	0.13784	0.13784	0.25294	0.25294
0.290	0.02202	0.143407	0.412999	-0.484306	0.103503	0.342365	-0.093584	0.15825	0.15825	0.28681	0.28681
0.330	0.02808	0.159547	0.394165	-0.457725	0.117124	0.338666	-0.091395	0.17823	0.17823	0.31909	0.31909
0.370	0.03478	0.174954	0.376355	-0.433080	0.130598	0.335050	-0.089412	0.19780	0.19780	0.34991	0.34991
0.410	0.04207	0.189648	0.359495	-0.410188	0.143929	0.331510	-0.087617	0.21697	0.21697	0.37934	0.37934
0.450	0.04994	0.203725	0.343519	-0.388884	0.157120	0.328039	-0.085991	0.23573	0.23573	0.40745	0.40745
0.490	0.05836	0.217160	0.328365	-0.369025	0.170173	0.324629	-0.084520	0.25412	0.25412	0.43432	0.43432
0.530	0.06731	0.230005	0.313979	-0.350482	0.183091	0.321275	-0.083189	0.27212	0.27212	0.46001	0.46001
0.570	0.07675	0.242288	0.300310	-0.333141	0.195875	0.317972	-0.081985	0.28975	0.28975	0.48458	0.48458
0.610	0.08664	0.254039	0.287313	-0.316901	0.208529	0.314715	-0.080897	0.30701	0.30701	0.50808	0.50808
0.650	0.09707	0.265282	0.274945	-0.301670	0.221053	0.311499	-0.079914	0.32392	0.32392	0.53056	0.53056
0.690	0.10790	0.276042	0.263167	-0.287366	0.233450	0.308321	-0.079026	0.34048	0.34048	0.55208	0.55208
0.730	0.11915	0.286342	0.251944	-0.273917	0.245719	0.305176	-0.078226	0.35670	0.35670	0.57268	0.57268
0.770	0.13080	0.296205	0.241243	-0.261255	0.257864	0.302062	-0.077503	0.37258	0.37258	0.59241	0.59241
0.810	0.14284	0.305648	0.231034	-0.249321	0.269885	0.298975	-0.076852	0.38814	0.38814	0.61130	0.61130
0.850	0.16801	0.323357	0.211981	-0.227425	0.293558	0.292873	-0.075737	0.41828	0.41828	0.64671	0.64671
0.890	0.19454	0.339610	0.194584	-0.207852	0.316746	0.286851	-0.074833	0.447118	0.447118	0.67922	0.67922

TABLE X.- $T_e/T_w = 2$, $f_w = 0$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	pu/pe_e
1.050	0.22231	0.354530	0.178671	-0.190290	0.339456	0.280895	-0.074099	0.47488	0.70906		
1.130	0.29123	0.368232	0.164091	-0.174479	0.361691	0.274992	-0.073501	0.50142	0.73646		
1.210	0.28120	0.380817	0.150713	-0.160200	0.383456	0.269132	-0.073009	0.52684	0.76163		
1.290	0.31213	0.392376	0.158423	-0.147267	0.404753	0.263308	-0.072599	0.55119	0.78475		
1.370	0.34375	0.402991	0.127119	-0.135523	0.425586	0.257514	-0.072249	0.57450	0.80598		
1.450	0.37659	0.412739	0.116711	-0.124833	0.445956	0.251747	-0.071940	0.59680	0.82548		
1.530	0.40997	0.421687	0.107120	-0.115080	0.465866	0.246003	-0.071658	0.61814	0.84337		
1.610	0.44404	0.429898	0.098276	-0.106164	0.485317	0.240281	-0.071388	0.63853	0.85980		
1.690	0.47874	0.437429	0.090114	-0.097998	0.504311	0.234581	-0.071120	0.65803	0.87486		
1.770	0.51401	0.444333	0.082578	-0.090507	0.522851	0.228902	-0.070844	0.67665	0.88667		
1.850	0.54981	0.450657	0.075617	-0.083622	0.540936	0.223246	-0.070551	0.69443	0.90131		
1.930	0.59610	0.456444	0.069184	-0.077286	0.558571	0.217615	-0.070235	0.71140	0.91289		
2.010	0.62283	0.461799	0.063238	-0.071447	0.575755	0.212009	-0.069891	0.72759	0.92348		
2.090	0.65997	0.4646576	0.057740	-0.066059	0.592493	0.206433	-0.069512	0.74302	0.93315		
2.170	0.69747	0.470989	0.052657	-0.061081	0.608786	0.200886	-0.069097	0.75772	0.94198		
2.250	0.73531	0.475011	0.047957	-0.056470	0.624636	0.195379	-0.068641	0.77172	0.95002		
2.330	0.77246	0.478672	0.043612	-0.052217	0.640047	0.189907	-0.068143	0.78504	0.95734		
2.410	0.81189	0.481998	0.039594	-0.048269	0.655022	0.184477	-0.067601	0.79772	0.96400		
2.490	0.85949	0.487744	0.032450	-0.041211	0.683678	0.173756	-0.066381	0.82121	0.97549		
2.570	0.90792	0.492458	0.026355	-0.039126	0.710635	0.163245	-0.064978	0.84238	0.98488		
2.650	0.94702	0.496226	0.021164	-0.029868	0.735929	0.152972	-0.063396	0.86142	0.99246		
2.730	0.9890	0.500000	0.016759	-0.025317	0.759601	0.142967	-0.061642	0.87848	0.99850		
2.810	1.02667	0.499252	0.013031	-0.021374	0.781694	0.133255	-0.059729	0.89375	1.00325		
2.890	1.020675	0.501627	0.009891	-0.017957	0.802259	0.123862	-0.057671	0.90735	1.00691		
2.970	1.028716	0.503454	0.006863	-0.008297	0.870331	0.098658	-0.040350	0.94800	1.01373		
3.050	1.036783	0.504820	0.007261	-0.014995	0.821348	0.114807	-0.055486	0.91945	1.00964		
3.130	1.044368	0.505801	0.005072	-0.012430	0.839017	0.106112	-0.053191	0.93018	1.01160		
3.210	1.020675	0.506463	0.003265	-0.010212	0.855324	0.097791	-0.050806	0.93965	1.01293		
3.290	1.036783	0.506863	0.001788	-0.008297	0.870331	0.089658	-0.040350	0.94800	1.01373		
3.370	1.044368	0.507051	0.000595	-0.006450	0.8846109	0.082322	-0.045845	0.95933	1.01410		
3.450	1.052967	0.507061	-0.000353	-0.005238	0.896695	0.075199	-0.043308	0.96175	1.01413		
3.530	1.061073	0.506721	-0.001654	-0.003011	0.918625	0.062146	-0.038218	0.97222	1.01345		
3.610	1.069185	0.506428	-0.002064	-0.002149	0.928090	0.056233	-0.035699	0.97644	1.01286		
3.690	1.077298	0.506945	-0.001092	-0.004093	0.908182	0.050720	-0.033220	0.98008	1.01215		
3.770	1.085410	0.506721	-0.002349	-0.001430	0.936641	0.050720	-0.033220	0.98008	1.01215		
3.850	1.093520	0.505682	-0.002529	-0.000834	0.944342	0.045600	-0.030795	0.98322	1.01136		

TABLE X.- $T_e/T_w = 2$, $f_w = 0$, $B_t = 1/3$ - Concluded

η	f	f''	f'''	f''''	f'''''	θ	θ'	θ''	θ'''	u/u_e	u_e/u_e
3.290	2.25907	•505269	-•002622	-•000348	•951253	•040862	-•028438	•98591	1.01054		
3.450	2.33988	•504846	-•002645	•000042	•957437	•036495	-•026160	•98821	1.00969		
5.610	2.42062	•504425	-•002613	•000350	•962951	•032486	-•023970	•99016	1.00885		
5.770	2.50130	•504013	-•002537	•000587	•967851	•028820	-•021878	•99182	1.00803		
5.930	2.58191	•503615	-•002428	•000762	•972191	•025480	-•019890	•99323	1.00723		
6.250	2.74294	•502881	-•002147	•000965	•979390	•019711	-•016244	•99540	1.00576		
6.570	2.90376	•502245	-•001825	•001022	•984922	•015035	-•013056	•99692	1.00449		
6.890	3.06439	•501713	-•001502	•000984	•989113	•011307	-•010325	•99796	1.00343		
7.210	3.22487	•501281	-•001202	•000889	•992243	•008381	-•008033	•99867	1.00256		
7.530	3.38522	•500940	-•000937	•000766	•994547	•006123	-•006149	•99915	1.00188		
7.850	3.54548	•500678	-•000713	•000634	•996219	•004408	-•004629	•99946	1.00136		
8.170	3.70566	•500489	-•000531	•000559	•997414	•003126	-•003429	•99967	1.00096		
8.490	3.86579	•500334	-•000387	•000395	•998256	•002185	-•002498	•99980	1.00067		
8.810	4.02598	•500229	-•000276	•000303	•998841	•001504	-•001790	•99988	1.00046		
9.130	4.18594	•500154	-•000193	•000222	•999240	•001020	-•001262	•99993	1.00031		
9.450	4.34598	•500103	-•000133	•000160	•999509	•000681	-•000875	•99996	1.00021		
9.770	4.50601	•500068	-•000089	•000113	•999688	•000448	-•000597	•99998	1.00014		
10.090	4.66603	•500044	-•000059	•000074	•999804	•000290	-•000400	•99999	1.00009		
10.410	4.82604	•500029	-•000038	•000053	•999879	•000185	-•000264	1.00000	1.00006		
10.730	4.98604	•500019	-•000024	•000035	•999927	•000116	-•000171	1.00000	1.00004		
11.050	5.14605	•500013	-•000015	•000023	•999957	•000072	-•000109	1.00000	1.00003		
11.370	5.30605	•500009	-•000009	•000015	•999975	•000044	-•000069	1.00001	1.00002		
11.690	5.46606	•500006	-•000006	•000009	•999986	•000026	-•000042	1.00001	1.00001		
12.010	5.62606	•500003	-•000003	•000006	•999993	•000016	-•000026	1.00001	1.00001		
12.330	5.78606	•500002	-•000002	•000003	•999996	•000009	-•000015	1.00001	1.00001		
12.650	5.94606	•500001	-•000001	•000002	•999999	•000005	-•000009	1.00001	1.00001		
12.970	6.10606	•500004	-•000000	•000001	1.000000	•000003	-•000005	1.00001	1.00001		

TABLE XI.- $T_e/T_w = 2$, $f_w = -0.5$, $E_u = 1/3$

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/v_e	$\rho u/\rho v_e$
0.00	-0.50000	0.00000	0.401790	-0.268963	0.000000	0.217754	0.010505	0.00000	0.00000	0.00000	0.00000
0.05	-0.49999	0.002006	0.400447	-0.268158	0.001089	0.217807	0.010505	0.000201	0.00401	0.00401	0.00401
0.10	-0.49998	0.004004	0.399108	-0.267355	0.002178	0.217859	0.010503	0.000401	0.00801	0.00801	0.00801
0.15	-0.49995	0.005997	0.397774	-0.266556	0.003267	0.217912	0.010501	0.000602	0.01199	0.01199	0.01199
0.20	-0.49992	0.007982	0.396443	-0.265760	0.004357	0.217964	0.010498	0.000802	0.01596	0.01596	0.01596
0.25	-0.49988	0.009961	0.395116	-0.264967	0.005447	0.218017	0.010493	0.001002	0.01992	0.01992	0.01992
0.30	-0.49982	0.011933	0.393793	-0.264176	0.006537	0.218069	0.010488	0.001201	0.02387	0.02387	0.02387
0.40	-0.49968	0.015858	0.391159	-0.262605	0.008719	0.218174	0.010474	0.01600	0.03172	0.03172	0.03172
0.50	-0.49950	0.019757	0.388541	-0.261054	0.010901	0.218278	0.010456	0.01997	0.03951	0.03951	0.03951
0.60	-0.49929	0.023629	0.385938	-0.259496	0.013084	0.218383	0.010435	0.02394	0.04726	0.04726	0.04726
0.70	-0.49903	0.027475	0.383351	-0.257959	0.015268	0.218487	0.010409	0.02789	0.05495	0.05495	0.05495
0.80	-0.49874	0.031296	0.380779	-0.256432	0.017454	0.218591	0.010380	0.03184	0.06259	0.06259	0.06259
0.90	-0.49840	0.035091	0.378222	-0.254917	0.019640	0.218695	0.010347	0.03578	0.07018	0.07018	0.07018
1.0	-0.49763	0.042605	0.373154	-0.251918	0.024016	0.218901	0.010270	0.04363	0.08521	0.08521	0.08521
1.50	-0.49670	0.050018	0.369145	-0.248961	0.028396	0.219105	0.010178	0.05144	0.10004	0.10004	0.10004
1.50	-0.49563	0.057331	0.363195	-0.246045	0.032780	0.219308	0.010072	0.05921	0.11466	0.11466	0.11466
1.70	-0.49441	0.064546	0.358303	-0.243167	0.037169	0.219508	0.009952	0.06694	0.12909	0.12909	0.12909
1.90	-0.49305	0.071663	0.353468	-0.240328	0.041561	0.219706	0.009818	0.07464	0.14333	0.14333	0.14333
2.10	-0.49154	0.078685	0.348690	-0.237525	0.045957	0.219901	0.009671	0.08230	0.15737	0.15737	0.15737
2.50	-0.48812	0.092444	0.339299	-0.232026	0.054761	0.220281	0.009339	0.09751	0.18489	0.18489	0.18489
2.90	-0.48415	0.105832	0.330126	-0.226663	0.063579	0.220647	0.008956	0.11256	0.21166	0.21166	0.21166
3.90	-0.47966	0.118857	0.321165	-0.221429	0.072412	0.220997	0.008527	0.12746	0.23771	0.23771	0.23771
3.70	-0.47465	0.131528	0.312410	-0.216316	0.081259	0.221329	0.008052	0.14222	0.26306	0.26306	0.26306
4.10	-0.46914	0.143852	0.303858	-0.211320	0.090118	0.221641	0.007534	0.15682	0.28770	0.28770	0.28770
4.50	-0.46314	0.155839	0.295503	-0.206436	0.098990	0.221931	0.006975	0.17127	0.31168	0.31168	0.31168
5.50	-0.44975	0.170829	0.279369	-0.195982	0.116765	0.222441	0.005744	0.19971	0.35766	0.35766	0.35766
6.10	-0.43457	0.200598	0.263975	-0.187923	0.134577	0.222846	0.004375	0.22755	0.40112	0.40112	0.40112
6.90	-0.41769	0.221084	0.249291	-0.179232	0.152418	0.223137	0.002883	0.25478	0.44217	0.44217	0.44217
7.70	-0.39922	0.240463	0.235289	-0.17086	0.170276	0.223305	0.001283	0.28141	0.48093	0.48093	0.48093
8.90	-0.37925	0.258748	0.221941	-0.162668	0.188143	0.223340	-0.000409	0.30743	0.51750	0.51750	0.51750
9.30	-0.35785	0.275990	0.209222	-0.155161	0.206007	0.223237	-0.002179	0.33285	0.55198	0.55198	0.55198
10.0	-0.33912	0.292239	0.197107	-0.147753	0.223957	0.222990	-0.004015	0.35766	0.58448	0.58448	0.58448
11.70	-0.285993	0.321946	0.174599	-0.133789	0.259468	0.222044	-0.007830	0.40548	0.64389	0.64389	0.64389
11.90	-0.23228	0.348225	0.154238	-0.120900	0.294878	0.220478	-0.01758	0.45091	0.69645	0.69645	0.69645
11.90	-0.17467	0.371407	0.135857	-0.109025	0.327987	0.218280	-0.015711	0.49397	0.74281	0.74281	0.74281
11.90	-0.11357	0.391797	0.119299	-0.098105	0.364694	0.215453	-0.019612	0.53468	0.78359	0.78359	0.78359

TABLE XI.- $T_e/T_w = 2$, $f_w = -0.5$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	u/u_e	p_u/p_{ue}
1.810	-0.04243	0.409672	0.104415	-0.088088	0.398900	0.212011	-0.023393	0.57309	0.81934	
1.970	0.01740	0.425291	0.091065	-0.078922	0.432506	0.207977	-0.026998	0.60923	0.85058	
2.130	0.03656	0.438888	0.079117	-0.070553	0.465422	0.203884	-0.030377	0.64316	0.87778	
2.290	0.15775	0.450677	0.068448	-0.062929	0.497561	0.198270	-0.033493	0.67492	0.90135	
2.450	0.23069	0.460854	0.058943	-0.056000	0.528844	0.192681	-0.036316	0.70457	0.92171	
2.610	0.30514	0.469595	0.050494	-0.049713	0.559197	0.186666	-0.038823	0.73219	0.92919	
2.770	0.38089	0.477063	0.043003	-0.044019	0.588557	0.180276	-0.040999	0.75784	0.95413	
2.930	0.45774	0.483402	0.036379	-0.038872	0.616868	0.173564	-0.042837	0.78160	0.96680	
3.090	0.53553	0.488746	0.030537	-0.034226	0.644083	0.166586	-0.044333	0.80354	0.97749	
3.250	0.61410	0.493212	0.025402	-0.030038	0.670164	0.159395	-0.045491	0.82375	0.98642	
3.410	0.69331	0.496909	0.020903	-0.026269	0.695081	0.152046	-0.046318	0.84230	0.99382	
3.570	0.77307	0.499932	0.016975	-0.022883	0.718613	0.144591	-0.046824	0.85929	0.99986	
3.730	0.85326	0.502366	0.013562	-0.019844	0.741347	0.137079	-0.047023	0.87480	1.00474	
3.890	0.93380	0.504296	0.010608	-0.017122	0.762678	0.129559	-0.046932	0.88891	1.00859	
4.050	1.01461	0.505785	0.008067	-0.014688	0.782608	0.122075	-0.046569	0.90172	1.01157	
4.210	1.09563	0.506897	0.005894	-0.012517	0.801746	0.114670	-0.045956	0.91330	1.01379	
4.370	1.17680	0.507689	0.004049	-0.010584	0.819509	0.107382	-0.045112	0.92374	1.01538	
4.530	1.25808	0.508208	0.002496	-0.008868	0.836116	0.100245	-0.044062	0.93313	1.01642	
4.690	1.33942	0.508501	0.001201	-0.007349	0.851597	0.093292	-0.042827	0.94154	1.01700	
4.850	1.42079	0.502605	0.000135	-0.006010	0.865981	0.086549	-0.041431	0.94905	1.01721	
5.010	1.50216	0.508555	-0.000731	-0.004684	0.879305	0.080041	-0.039897	0.95573	1.01711	
5.170	1.58352	0.508381	-0.001420	-0.003806	0.891608	0.073788	-0.038249	0.96166	1.01676	
5.330	1.66484	0.508109	-0.001956	-0.002913	0.902932	0.067806	-0.036507	0.96690	1.01622	
5.490	1.74611	0.507762	-0.002359	-0.002142	0.913321	0.062110	-0.034694	0.97151	1.01552	
5.650	1.82732	0.507360	-0.002647	-0.001481	0.922822	0.056707	-0.032831	0.97556	1.01472	
5.810	1.90846	0.506920	-0.002838	-0.000921	0.931483	0.051605	-0.030936	0.97911	1.01384	
5.970	1.98953	0.506456	-0.002947	-0.000450	0.939352	0.046808	-0.029029	0.98220	1.01291	
6.130	2.07053	0.505981	-0.002986	-0.000060	0.946478	0.042316	-0.027126	0.98488	1.01196	
6.290	2.15145	0.505504	-0.002970	-0.00259	0.952909	0.038127	-0.025243	0.98720	1.01101	
6.450	2.23229	0.505033	-0.002907	-0.000513	0.958694	0.034236	-0.023393	0.98921	1.01007	
6.610	2.31306	0.504575	-0.002808	-0.000711	0.963881	0.030638	-0.021590	0.99093	1.00915	
6.770	2.39375	0.504136	-0.002682	-0.000860	0.968514	0.027324	-0.019844	0.99240	1.00827	
6.930	2.47438	0.503718	-0.002536	-0.000965	0.972639	0.024285	-0.018163	0.99365	1.00744	
7.090	2.63545	0.502998	-0.002206	-0.001072	0.979535	0.018983	-0.015031	0.99562	1.00592	
7.570	2.79629	0.502308	-0.001860	-0.001074	0.984889	0.014630	-0.012334	0.99702	1.00462	

TABLE XI.- $T_e/T_w = 2$, $f_w = -0.5$, $\epsilon_u = 1/3$ - Concluded

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	pu/p_{e0}
7.890	2.95694	0.501766	-0.001526	0.001006	0.988987	0.011115	-0.009795	0.99801	1.00353
8.210	3.11743	0.501328	-0.001221	0.000897	0.992079	0.008323	-0.007713	0.99868	1.00266
8.530	3.27780	0.500981	-0.000954	0.000769	0.994378	0.006143	-0.005974	0.99915	1.00196
8.850	3.43806	0.500713	-0.000730	0.000637	0.996064	0.004467	-0.004550	0.99945	1.00143
9.170	3.59826	0.500510	-0.000546	0.000512	0.997281	0.003201	-0.003409	0.99966	1.00102
9.490	3.75840	0.500359	-0.000401	0.000401	0.998147	0.002260	-0.002512	0.99979	1.00072
9.810	3.91849	0.500250	-0.000288	0.000306	0.998754	0.001571	-0.001820	0.99988	1.00050
10.130	4.07856	0.500172	-0.000203	0.000228	0.999173	0.001076	-0.001298	0.99993	1.00034
10.450	4.23861	0.500118	-0.000141	0.000166	0.999459	0.000726	-0.000910	0.99996	1.00024
10.770	4.39864	0.500080	-0.000095	0.000119	0.999650	0.000483	-0.000627	0.99999	1.00016
11.090	4.55866	0.500055	-0.000063	0.000083	0.999776	0.000316	-0.000426	1.00000	1.00011
11.410	4.71867	0.500039	-0.000041	0.000057	0.999858	0.000204	-0.000284	1.00001	1.00008
11.730	4.87868	0.500028	-0.000026	0.000038	0.999911	0.000129	-0.000186	1.00001	1.00006
12.050	5.03869	0.500021	-0.000016	0.000025	0.999944	0.000081	-0.000120	1.00001	1.00004
12.370	5.19870	0.500017	-0.000010	0.000016	0.999964	0.000050	-0.000076	1.00002	1.00003
12.690	5.35870	0.500015	-0.000006	0.000010	0.999977	0.000030	-0.000048	1.00002	1.00003
13.010	5.51871	0.500013	-0.000003	0.000006	0.999985	0.000018	-0.000029	1.00002	1.00003
13.330	5.67871	0.500012	-0.000001	0.000004	0.999999	0.000011	-0.000018	1.00002	1.00003
13.650	5.83872	0.500012	-0.000000	0.000002	0.999992	0.000006	-0.000010	1.00002	1.00002
13.970	5.99872	0.500012	0.000000	0.000001	0.999993	0.000003	-0.000006	1.00002	1.00002

TABLE XIII.- $T_e/T_w = 2$, $f_w = -1.0$, $E_u = 1/3$

η	f	f'	f''	f'''	θ	θ'	θ''	θ'''	u/u_e	μ_e/μ_e
0.00	-1.00000	0.00000	0.262042	-0.064013	0.00000	0.101823	0.038705	0.00000	0.00000	0.00000
0.05	-1.00000	0.001309	0.261722	-0.064128	0.000510	0.102017	0.038750	0.00131	0.00262	0.00262
0.10	-0.99999	0.002617	0.261401	-0.064243	0.001020	0.102210	0.038795	0.00262	0.00523	0.00523
0.15	-0.99997	0.003923	0.261079	-0.064357	0.001532	0.102405	0.038839	0.00393	0.00785	0.00785
0.20	-0.99995	0.005228	0.260757	-0.064471	0.002044	0.102599	0.038883	0.00524	0.01046	0.01046
0.25	-0.99992	0.006531	0.260435	-0.064585	0.002558	0.102793	0.038927	0.00655	0.01306	0.01306
0.30	-0.99988	0.007832	0.260111	-0.064698	0.003072	0.102986	0.038970	0.00786	0.01566	0.01566
0.40	-0.99979	0.010430	0.259463	-0.064925	0.004104	0.103378	0.039056	0.01047	0.02086	0.02086
0.50	-0.99967	0.013022	0.258813	-0.065151	0.005140	0.103769	0.039140	0.01309	0.02604	0.02604
0.60	-0.99953	0.015606	0.258160	-0.065375	0.006179	0.104161	0.039223	0.01570	0.03121	0.03121
0.70	-0.99936	0.018185	0.257505	-0.065598	0.007223	0.104554	0.039304	0.01832	0.03637	0.03637
0.80	-0.99917	0.020757	0.256848	-0.065821	0.008270	0.104947	0.039384	0.02093	0.04151	0.04151
0.90	-0.99895	0.023322	0.256189	-0.066042	0.009322	0.105341	0.039463	0.02354	0.04664	0.04664
1.0	-0.99843	0.028492	0.254864	-0.066461	0.011437	0.106132	0.039615	0.02876	0.05686	0.05686
1.30	-0.99781	0.033516	0.253530	-0.066915	0.013567	0.106926	0.039760	0.03397	0.06703	0.06703
1.50	-0.99709	0.038573	0.252187	-0.067344	0.015714	0.107723	0.039900	0.03916	0.07715	0.07715
1.70	-0.99627	0.043604	0.250836	-0.067768	0.017876	0.108522	0.040033	0.04438	0.08721	0.08721
1.90	-0.99534	0.048607	0.249476	-0.068186	0.020055	0.109324	0.040160	0.04958	0.09721	0.09721
2.10	-0.99432	0.053583	0.248109	-0.068599	0.022249	0.110128	0.040280	0.05477	0.10717	0.10717
2.50	-0.99198	0.063452	0.245348	-0.069407	0.026687	0.111744	0.040500	0.06515	0.12690	0.12690
2.90	-0.98925	0.073210	0.242556	-0.070189	0.031189	0.113368	0.040692	0.07549	0.14642	0.14642
3.30	-0.98613	0.082856	0.239734	-0.070944	0.035756	0.114999	0.040856	0.08582	0.16571	0.16571
3.70	-0.98262	0.092388	0.236881	-0.071671	0.040389	0.116636	0.040990	0.09612	0.18478	0.18478
4.10	-0.97874	0.101806	0.234000	-0.072368	0.045067	0.117447	0.041095	0.10640	0.20361	0.20361
4.50	-0.97443	0.111108	0.231092	-0.073033	0.049851	0.119923	0.041162	0.11665	0.22222	0.22222
5.30	-0.96486	0.129360	0.225199	-0.074263	0.059577	0.123220	0.041223	0.13707	0.25872	0.25872
6.10	-0.95379	0.147138	0.219214	-0.075351	0.069566	0.126515	0.041147	0.15737	0.29428	0.29428
6.90	-0.94133	0.164432	0.213147	-0.076288	0.079819	0.129800	0.040939	0.17756	0.32886	0.32886
7.70	-0.92750	0.181239	0.207012	-0.077066	0.090333	0.133062	0.040595	0.19761	0.36248	0.36248
8.50	-0.91234	0.197553	0.200821	-0.077678	0.101108	0.136291	0.040114	0.21753	0.39511	0.39511
9.30	-0.89590	0.213370	0.194508	-0.078121	0.12139	0.139476	0.039495	0.23730	0.42674	0.42674
1.090	-0.85933	0.243501	0.182050	-0.078487	0.134954	0.145671	0.037842	0.27636	0.48700	0.48700
1.250	-0.81809	0.271625	0.169509	-0.078161	0.158737	0.151557	0.035650	0.31474	0.54325	0.54325
1.410	-0.77251	0.297750	0.157075	-0.077163	0.183432	0.157051	0.032946	0.35237	0.59550	0.59550
1.570	-0.72291	0.321901	0.144851	-0.075537	0.208968	0.162075	0.029772	0.38917	0.64380	0.64380
1.730	-0.66961	0.344119	0.132933	-0.073348	0.235266	0.166556	0.026183	0.42508	0.68824	0.68824

TABLE XIII.- $T_e/T_w = 2$, $f_w = -1.0$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	μ_u/μ_e
1.0890	-0.61290	0.364460	0.121405	-0.070669	0.262234	0.170435	0.022241	0.022241	0.022241	0.46003	0.72892
2.050	-0.55308	0.382993	0.110340	-0.067587	0.289771	0.173659	0.018018	0.018018	0.018018	0.49397	0.76599
2.0210	-0.49043	0.399797	0.099795	-0.064187	0.317768	0.176189	0.013587	0.013587	0.013587	0.52684	0.79959
2.0370	-0.42523	0.414957	0.089813	-0.060556	0.346113	0.177999	0.009024	0.009024	0.009024	0.55858	0.82991
2.0530	-0.35773	0.428568	0.080425	-0.056776	0.374689	0.179074	0.004403	0.004403	0.004403	0.58915	0.85714
2.0690	-0.28816	0.440726	0.071648	-0.052921	0.403377	0.179409	-0.000204	-0.000204	-0.000204	0.61850	0.88145
2.0850	-0.21677	0.451529	0.063491	-0.049056	0.432060	0.179612	-0.004733	-0.004733	-0.004733	0.64662	0.90306
3.010	-0.14374	0.461075	0.053948	-0.045236	0.460623	0.177902	-0.009125	-0.009125	-0.009125	0.67346	0.9245
3.0170	-0.06928	0.469464	0.049010	-0.041506	0.488952	0.176103	-0.013326	-0.013326	-0.013326	0.69901	0.93893
3.0330	-0.00643	0.476790	0.042660	-0.037903	0.516941	0.173650	-0.017292	-0.017292	-0.017292	0.72326	0.95358
3.0490	-0.08324	0.483145	0.036873	-0.034454	0.544488	0.170583	-0.020988	-0.020988	-0.020988	0.74621	0.96629
3.0650	-0.16099	0.488618	0.031625	-0.021176	0.571498	0.166950	-0.024383	-0.024383	-0.024383	0.76786	0.97724
3.0810	-0.23955	0.493292	0.026887	-0.028084	0.597884	0.162798	-0.027456	-0.027456	-0.027456	0.78822	0.98658
3.0970	-0.31881	0.497247	0.022628	-0.025185	0.623958	0.158182	-0.030191	-0.030191	-0.030191	0.80732	0.99449
4.0130	-0.39864	0.500557	0.018818	-0.024479	0.648480	0.153155	-0.032580	-0.032580	-0.032580	0.82516	1.00111
4.0290	-0.47895	0.503291	0.015425	-0.019967	0.672559	0.147775	-0.034619	-0.034619	-0.034619	0.84178	1.00658
4.0450	-0.55966	0.505514	0.012418	-0.017645	0.695752	0.142096	-0.036311	-0.036311	-0.036311	0.25723	1.01103
4.0610	-0.64069	0.507284	0.009768	-0.01507	0.718017	0.136173	-0.037660	-0.037660	-0.037660	0.87152	1.01457
4.0770	-0.72197	0.508657	0.007444	-0.013545	0.739318	0.130062	-0.038678	-0.038678	-0.038678	0.88472	1.01731
4.0930	-0.80344	0.509683	0.005425	-0.011752	0.759629	0.123814	-0.039376	-0.039376	-0.039376	0.89685	1.01937
5.0090	-0.88506	0.510498	0.003677	-0.010119	0.778933	0.117478	-0.039771	-0.039771	-0.039771	0.90798	1.02082
5.0250	-0.96676	0.510873	0.002179	-0.008636	0.797220	0.111102	-0.039880	-0.039880	-0.039880	0.91015	1.02175
5.0410	-1.04852	0.511117	0.000906	-0.007296	0.814486	0.104731	-0.039723	-0.039723	-0.039723	0.92741	1.02223
5.0570	-1.13031	0.511174	-0.000163	-0.006089	0.830736	0.098404	-0.039320	-0.039320	-0.039320	0.93582	1.02235
5.0730	-1.21209	0.511075	-0.001049	-0.005006	0.845980	0.092160	-0.038694	-0.038694	-0.038694	0.94343	1.02215
5.0890	-1.29385	0.510847	-0.001771	-0.004040	0.860234	0.086032	-0.037868	-0.037868	-0.037868	0.95029	1.02169
6.0050	-1.37556	0.510516	-0.002348	-0.003182	0.873518	0.080052	-0.036862	-0.036862	-0.036862	0.95646	1.02103
6.0210	-1.45721	0.510103	-0.002795	-0.002425	0.885859	0.074245	-0.035701	-0.035701	-0.035701	0.96198	1.02021
6.0370	-1.53879	0.509627	-0.003129	-0.001761	0.897287	0.068635	-0.034407	-0.034407	-0.034407	0.96691	1.01925
6.0530	-1.62028	0.509107	-0.003363	-0.001183	0.907834	0.063240	-0.033002	-0.033002	-0.033002	0.97129	1.01821
6.0690	-1.70170	0.508556	-0.003511	-0.000685	0.917536	0.058079	-0.031507	-0.031507	-0.031507	0.97517	1.01711
6.0850	-1.78302	0.507987	-0.003586	-0.000259	0.926432	0.053162	-0.029943	-0.029943	-0.029943	0.97960	1.01597
7.010	1.86425	0.507411	-0.003598	-0.000099	0.934562	0.048499	-0.028330	-0.028330	-0.028330	0.98162	1.01482
7.0170	1.94539	0.506838	-0.003558	-0.000397	0.941966	0.044098	-0.026685	-0.026685	-0.026685	0.98426	1.01368
7.0330	2.02644	0.506275	-0.003474	-0.000639	0.948687	0.039961	-0.025027	-0.025027	-0.025027	0.98657	1.01255
7.0490	2.10740	0.505729	-0.003356	-0.000832	0.954767	0.036089	-0.023370	-0.023370	-0.023370	0.98858	1.01146

TABLE XII.- $T_e/T_w = 2$, $f_w = -1.0$, $E_1 = 1/3$ - Concluded

η	r	r'	r''	r'''	r''''	θ	θ'	θ''	θ'''	u/u_e	au/peu_e
7.650	2.18828	•505203	-•003210	•000980	•960250	•032482	-•021730	•99032	1.01041		
7.810	2.26907	•504702	-•003044	•001089	•965175	•029134	-•020119	•99103	1.00940		
7.970	2.34978	•504230	-•002864	•001163	•969586	•026041	-•018549	•92312	1.00846		
8.130	2.43042	•503786	-•002674	•001206	•973522	•023196	-•017029	•99423	1.00757		
8.450	2.59150	•502993	-•002283	•001220	•980122	•018211	-•014173	•99599	1.00599		
8.770	2.75235	•502324	-•001901	•001160	•985269	•014095	-•011599	•99725	1.00465		
9.090	2.91300	•501774	-•001546	•001053	•989226	•010755	-•009335	•99814	1.00355		
9.410	3.07350	•501331	-•001229	•000921	•992223	•008088	-•007388	•99876	1.00266		
9.730	3.23387	•500982	-•000957	•000779	•994462	•005994	-•005751	•99919	1.00196		
10.050	3.39414	•500714	-•000730	•000641	•996110	•004377	-•004402	•99948	1.00143		
10.370	3.55433	•500511	-•000546	•000513	•997305	•003149	-•003313	•99967	1.00102		
10.690	3.71447	•500360	-•000401	•000400	•998159	•002233	-•002453	•99980	1.00072		
11.010	3.87456	•500251	-•000289	•000305	•998760	•001559	-•001786	•99988	1.00050		
11.330	4.03463	•500173	-•000204	•000228	•999177	•001073	-•001279	•99993	1.00035		
11.650	4.19468	•500118	-•000141	•000166	•999461	•000727	-•000901	•99997	1.00024		
11.970	4.35471	•500080	-•000096	•000119	•999653	•000485	-•000624	•99999	1.00016		
12.290	4.51473	•500055	-•000064	•000083	•999780	•000319	-•000425	•000000	1.00011		
12.610	4.67475	•500038	-•000042	•000057	•999863	•000206	-•000285	•00001	1.00008		
12.930	4.83476	•500027	-•000027	•000038	•999916	•000132	-•000188	•00001	1.00005		
13.250	4.99476	•500021	-•000017	•000025	•999950	•000083	-•000122	•00002	1.00004		
13.570	5.15477	•500016	-•000010	•000016	•999971	•000051	-•000078	•00002	1.00003		
13.890	5.31477	•500014	-•000006	•000010	•999984	•000031	-•000049	•00002	1.00003		
14.210	5.47478	•500012	-•000003	•000007	•999992	•000019	-•000030	•00002	1.00002		
14.530	5.63478	•500012	-•000002	•000004	•999997	•000011	-•000018	•00002	1.00002		
14.850	5.79479	•500011	-•000000	•000002	1.000001	•000001	-•00001	•00002	1.00002		
15.170	5.95479	•500011	•000000					•000006	1.00002		

TABLE XIII.- $T_e/T_w = 4.0$, $f_w = 0$, $E_u = 1/3$

γ	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	$\rho u/\rho u_e$
.000	.00000	.487475	1.0532746	.000000	.367075	-.343597	.000000	.000000	.000000	.000000	.000000
.005	.00001	.002418	.479907	1.0494653	.001831	.365370	-.338553	.00243	.00243	.00967	.00967
.010	.00002	.004799	.0472526	1.0457879	.003654	.363689	-.333635	.00485	.00485	.01920	.01920
.015	.00005	.007144	.045326	1.0422367	.005468	.362033	-.328838	.00726	.00726	.02858	.02858
.020	.00010	.009453	.0458301	1.0388062	.007274	.360401	-.324158	.00966	.00966	.03781	.03781
.025	.00015	.011727	.0451444	1.0354911	.009072	.358791	-.319592	.01205	.01205	.04691	.04691
.030	.00021	.013958	.0447720	1.0322865	.010862	.357205	-.315134	.01442	.01442	.05587	.05587
.040	.00037	.018350	.0431829	1.0261900	.014418	.354097	-.306534	.01914	.01914	.07340	.07340
.050	.00056	.022606	.0419499	1.0204820	.017944	.351073	-.298329	.02382	.02382	.09042	.09042
.060	.00089	.026742	.0407721	1.0151311	.021440	.348129	-.290496	.02846	.02846	.10697	.10697
.070	.00111	.030762	.0396462	1.01089	.024907	.345262	-.283011	.03306	.03306	.12305	.12305
.080	.00144	.034673	.0385689	1.0053900	.028346	.342467	-.275053	.03762	.03762	.13869	.13869
.090	.00181	.038478	.0375374	1.0009511	.031757	.339743	-.269003	.04214	.04214	.15391	.15391
.110	.00265	.045789	.0356012	-.928308	.038499	.334494	-.256154	.05108	.05108	.18316	.18316
.130	.00364	.052728	.0338183	-.856012	.045138	.329490	-.244335	.05987	.05987	.21091	.21091
.150	.00476	.059325	.0321720	-.791400	.051680	.324714	-.233436	.06852	.06852	.23730	.23730
.170	.00601	.065605	.0306482	-.733450	.058128	.320147	-.223358	.07705	.07705	.26242	.26242
.190	.00738	.071592	.0292343	-.681301	.064487	.315775	-.214020	.08544	.08544	.28637	.28637
.210	.00887	.077506	.0279196	-.634224	.070760	.311582	-.205348	.09372	.09372	.30922	.30922
.230	.01047	.082764	.0266945	-.591600	.076951	.307557	-.197278	.10187	.10187	.33106	.33106
.250	.01218	.087989	.0255506	-.552900	.083064	.303687	-.189753	.10991	.10991	.35196	.35196
.270	.01399	.092991	.0244805	-.517669	.089100	.299963	-.182724	.11785	.11785	.37196	.37196
.290	.01590	.097786	.0234778	-.485515	.095063	.296375	-.176147	.12567	.12567	.39114	.39114
.310	.01790	.102386	.0225367	-.456101	.100956	.292915	-.169982	.13340	.13340	.40954	.40954
.330	.01999	.106804	.0216518	-.429131	.106780	.289574	-.164195	.14102	.14102	.42722	.42722
.350	.02217	.111090	.0208187	-.404249	.112539	.286345	-.158795	.14854	.14854	.44420	.44420
.370	.02449	.115135	.0200331	-.381532	.118235	.283221	-.153633	.15597	.15597	.46054	.46054
.390	.02677	.119066	.0192914	-.360482	.123869	.280197	-.148804	.16331	.16331	.47627	.47627
.410	.02919	.122854	.0185901	-.341027	.129443	.277267	-.144245	.17056	.17056	.49142	.49142
.430	.03169	.126505	.0179263	-.323013	.134960	.274426	-.139937	.17772	.17772	.50602	.50602
.450	.03425	.130027	.0172972	-.306306	.140421	.271668	-.135860	.18480	.18480	.52011	.52011
.470	.03689	.133426	.0167003	-.290786	.145827	.268990	-.131998	.19180	.19180	.53370	.53370
.490	.03959	.136709	.0161333	-.276345	.151181	.266387	-.128336	.19871	.19871	.54684	.54684
.530	.04518	.142948	.0190812	-.250332	.161736	.261392	-.121555	.21231	.21231	.57179	.57179
.570	.05102	.148787	.0141263	-.227619	.172096	.256654	-.115421	.22560	.22560	.59515	.59515
.610	.05708	.154261	.0132565	-.207685	.182271	.252150	-.109851	.23861	.23861	.61704	.61704

TABLE XIII.- $T_e/T_w = 1.0$, $f_w = 0$, $Eu = 1/3$ - Continued

η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	pu'/pue
0.50	0.06336	0.159462	0.124616	-0.190104	0.192271	0.247859	-0.104776	0.25135	0.3761
0.59	0.06983	0.164239	0.117330	-0.174530	0.202103	0.243762	-0.100139	0.26382	0.5696
0.70	0.07649	0.168796	0.110631	-0.160676	0.211774	0.239843	-0.095888	0.27604	0.67519
0.770	0.08333	0.173096	0.104456	-0.148304	0.221292	0.236087	-0.091981	0.28801	0.69239
0.810	0.09034	0.177159	0.098749	-0.137214	0.230663	0.232480	-0.088381	0.29975	0.70864
0.850	0.09750	0.181002	0.093464	-0.127241	0.239892	0.229013	-0.085056	0.31126	0.72401
0.890	0.10481	0.184641	0.088557	-0.118242	0.248986	0.225673	-0.081977	0.32256	0.73856
0.90	0.11227	0.188091	0.083993	-0.110099	0.257948	0.222451	-0.079121	0.33364	0.75236
0.970	0.11986	0.191365	0.079739	-0.102708	0.266783	0.219340	-0.076465	0.34452	0.76546
1.010	0.12757	0.194474	0.075767	-0.095982	0.275496	0.216332	-0.073992	0.35520	0.77790
1.050	0.13541	0.197430	0.072053	-0.089846	0.284091	0.213419	-0.071684	0.36569	0.78972
1.090	0.14337	0.200241	0.068573	-0.084234	0.292571	0.210595	-0.069526	0.37600	0.80097
1.130	0.15143	0.202918	0.065308	-0.079091	0.300940	0.207855	-0.067505	0.38612	0.81167
1.170	0.15960	0.205469	0.062240	-0.074366	0.309201	0.205193	-0.065609	0.39606	0.82187
1.210	0.16787	0.207900	0.059353	-0.070016	0.317356	0.202605	-0.063829	0.40583	0.83160
1.290	0.18468	0.212433	0.054069	-0.062298	0.333364	0.197631	-0.060576	0.42488	0.84973
1.370	0.20185	0.216566	0.049356	-0.055685	0.348984	0.192903	-0.057681	0.44330	0.866626
1.450	0.21932	0.220343	0.045135	-0.049981	0.364234	0.188394	-0.055092	0.46111	0.88137
1.530	0.23709	0.223799	0.041339	-0.045031	0.379132	0.184081	-0.052764	0.47835	0.89520
1.610	0.25512	0.226967	0.037913	-0.040711	0.393692	0.179946	-0.050662	0.49503	0.90787
1.690	0.27340	0.229874	0.034811	-0.036922	0.407928	0.175970	-0.048756	0.51119	0.91950
1.770	0.29190	0.232544	0.031994	-0.033582	0.421851	0.172140	-0.047021	0.52684	0.93018
1.850	0.31060	0.235000	0.029428	-0.030625	0.435474	0.168443	-0.045434	0.54201	0.94000
1.930	0.32949	0.237259	0.027085	-0.027996	0.448805	0.164867	-0.043978	0.55671	0.94904
2.010	0.34856	0.239339	0.024941	-0.025651	0.461855	0.161403	-0.042637	0.57096	0.95735
2.090	0.36778	0.241254	0.022974	-0.023550	0.474633	0.158042	-0.041398	0.58478	0.96502
2.170	0.38715	0.243019	0.021167	-0.021662	0.487145	0.154777	-0.040250	0.59817	0.97207
2.250	0.40666	0.244645	0.019503	-0.019961	0.499399	0.151600	-0.039181	0.61117	0.97858
2.330	0.42629	0.246143	0.017969	-0.018423	0.511403	0.148506	-0.038184	0.62378	0.98457
2.410	0.44604	0.247523	0.016552	-0.017029	0.523162	0.145489	-0.037251	0.63601	0.99009
2.490	0.46589	0.248794	0.015241	-0.015762	0.534683	0.142544	-0.036376	0.64787	0.99518
2.650	0.50589	0.251040	0.012901	-0.013554	0.557032	0.136055	-0.034773	0.67055	1.000416
2.810	0.54621	0.252399	0.010884	-0.011705	0.578490	0.131408	-0.033388	0.69191	1.01176
2.970	0.58681	0.254538	0.009140	-0.010144	0.599094	0.126180	-0.032038	0.71201	1.01815
3.130	0.62765	0.255876	0.007626	-0.008817	0.618878	0.121150	-0.030851	0.73094	1.02351
3.290	0.66868	0.256989	0.006308	-0.007681	0.637872	0.116302	-0.029756	0.74877	1.02795

TABLE XIII.- $T_e/T_w = 4.0$, $f_w = 0$, $E_u = 1/3$ - Continued

γ	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	p_u/p_{ue}
3.0450	70987	257904	8005159	-0006704	656104	111624	-0028738	76554	03162		
3.0610	75120	258648	004156	-005858	673600	107103	-027785	78132	03459		
3.0770	79263	259241	003279	-005123	690384	102730	-026883	79617	03696		
3.0930	83415	259703	002511	-004481	706481	098498	-026027	81013	03881		
4.0090	87573	260050	001840	-003918	721911	094399	-025210	82325	04020		
4.0250	91736	260296	001254	-003423	736696	090429	-024425	83557	04118		
4.0410	95802	260455	000742	-002987	750855	086582	-023668	84715	04182		
4.0570	100070	260537	000296	-002600	764408	082854	-022935	85801	04215		
4.0730	104239	260553	-000092	-002257	777374	079242	-022223	86819	04221		
5.0050	112575	260418	-000719	-001681	801618	072351	-020853	88668	04167		
5.370	120904	260110	-001181	-001223	823725	065890	-019541	90289	04044		
5.690	129221	259676	-001511	-000857	843831	059840	-018278	91704	03870		
6.010	137522	259154	-001737	-000564	862065	054188	-017058	92938	03662		
6.330	145806	258574	-001879	-000330	878552	048919	-015878	94008	03429		
6.650	154070	257959	-001953	-000144	893413	044021	-014737	94935	03184		
6.970	162315	257329	-001975	-00004	906764	039483	-013634	95734	02932		
7.290	170540	256700	-001955	-000119	918719	035291	-012572	96420	02680		
7.610	178744	256082	-001902	-000206	929386	031433	-011551	97008	02433		
7.930	186929	255465	-001825	-000272	938870	027894	-010573	97509	02194		
8.250	195095	254916	-001730	-000319	947271	024661	-009639	97934	01966		
8.570	203244	254379	-001622	-000350	954684	021720	-008753	98293	01752		
8.890	211376	253878	-001507	-000369	961201	019054	-007915	98596	01551		
9.210	219493	253415	-001388	-000376	966907	016649	-007126	98850	01366		
9.530	227595	252991	-001267	-000375	971882	014488	-006387	99062	01196		
10.170	243762	252295	-001033	-000354	979940	010835	-005063	99384	00902		
10.610	259887	251664	-000818	-000315	985917	007966	-003938	99602	00666		
11.450	275978	251202	-000631	-000269	990276	005755	-003004	99748	00481		
12.090	292043	250850	-000474	-000221	993398	004084	-002247	99843	00340		
12.730	308088	250589	-000348	-000176	995595	002845	-001647	99905	00236		
13.370	324120	250400	-000249	-000135	997112	001946	-001183	99943	00160		
14.010	340141	250266	-000174	-000101	998141	001507	-000833	99967	00106		
14.650	356155	250174	-000118	-000073	998827	000861	-000574	99981	00070		
15.290	372164	250111	-000079	-000052	999274	000557	-000367	99990	00045		
15.930	388169	250070	-000051	-000035	999561	000353	-000256	99995	00028		
16.570	404173	250044	-000033	-000024	999742	000219	-000166	99998	00017		
17.210	420175	250027	-000020	-000016	999853	000134	-000105	1.00000	1.00011		

TABLE XIII.- $T_e/T_w = 4.0$, $I_w = 0$, $E_u = 1/3$ - Concluded

γ	ϵ	ϵ'	ϵ''	ϵ'''	θ	θ'	θ''	u/u_e	$\rho u/\rho_e u_e$
17.050	4.35177	•236017	•000012	•000010	•999920	•000080	•000065	1.000001	1.000007
18.490	4.052177	•250010	•000007	•000006	•999960	•000047	•000040	1.00001	1.00004
19.130	4.0454178	•250007	•000004	•000004	•999983	•000027	•000024	1.00001	1.00003
19.770	4.044178	•250005	•000002	•000002	•999997	•000015	•000014	1.00002	1.00002
20.410	5.00179	•250004	•000001	•000001	•000004	•000008	•000008	1.00002	1.00001

TABLE XIV.— $T_e/T_W = 4.0$, $\tau_W = -0.5$, $\beta_u = 1/3$

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	$pu/p_e u_e$
0.00	-0.50000	0.000000	0.296164	-0.498506	0.000000	0.197544	-0.053417	0.00000	0.00000	0.00000	0.00000
0.05	-0.50000	0.001475	0.293885	-0.453220	0.00987	0.197278	-0.053008	0.00148	0.00590	0.00590	0.00590
0.10	-0.49999	0.002939	0.291632	-0.448019	0.01973	0.197014	-0.052605	0.00296	0.01176	0.01176	0.01176
0.15	-0.49997	0.004391	0.289404	-0.442902	0.02957	0.196752	-0.052207	0.00443	0.01757	0.01757	0.01757
0.20	-0.49994	0.005833	0.287202	-0.437848	0.03940	0.196492	-0.051814	0.00590	0.02333	0.02333	0.02333
0.25	-0.49991	0.007264	0.285026	-0.432914	0.04922	0.196234	-0.051427	0.00737	0.02905	0.02905	0.02905
0.30	-0.49987	0.008643	0.282873	-0.428039	0.05903	0.195978	-0.051045	0.00884	0.03473	0.03473	0.03473
0.40	-0.49977	0.011451	0.278641	-0.418419	0.07860	0.195471	-0.050295	0.01176	0.04596	0.04596	0.04596
0.50	-0.49964	0.014256	0.274902	-0.409295	0.09812	0.194972	-0.049565	0.01468	0.05703	0.05703	0.05703
0.60	-0.49948	0.016981	0.270454	-0.400356	0.01759	0.194480	-0.048854	0.01758	0.06792	0.06792	0.06792
0.70	-0.49930	0.019646	0.266494	-0.391690	0.01702	0.193994	-0.048161	0.02047	0.07866	0.07866	0.07866
0.80	-0.49909	0.022311	0.262619	-0.383286	0.015639	0.193516	-0.047486	0.02336	0.08925	0.08925	0.08925
0.90	-0.49885	0.024918	0.258827	-0.375134	0.017572	0.193045	-0.046628	0.02623	0.0967	0.0967	0.0967
1.10	-0.49830	0.030021	0.251482	-0.353549	0.021424	0.192121	-0.045561	0.03195	0.12008	0.12008	0.12008
1.30	-0.49765	0.034980	0.244439	-0.344860	0.025257	0.191222	-0.044356	0.03763	0.13992	0.13992	0.13992
1.50	-0.49691	0.039800	0.237682	-0.331002	0.029073	0.190346	-0.043210	0.04327	0.15920	0.15920	0.15920
1.70	-0.49606	0.044489	0.231194	-0.317916	0.032871	0.189493	-0.042119	0.04888	0.17796	0.17796	0.17796
1.90	-0.49513	0.049050	0.224961	-0.305544	0.036653	0.188661	-0.041079	0.05444	0.19620	0.19620	0.19620
2.10	-0.49410	0.053489	0.218968	-0.293839	0.040418	0.187850	-0.040089	0.05997	0.21396	0.21396	0.21396
2.50	-0.49179	0.062018	0.207654	-0.272245	0.047900	0.186283	-0.038244	0.07093	0.24807	0.24807	0.24807
2.90	-0.48915	0.070112	0.197160	-0.252811	0.055321	0.184788	-0.036564	0.08175	0.28045	0.28045	0.28045
3.30	-0.48619	0.077801	0.187404	-0.235262	0.062684	0.183356	-0.035031	0.09243	0.31120	0.31120	0.31120
3.70	-0.48293	0.085113	0.178316	-0.219368	0.069991	0.181984	-0.033631	0.10298	0.34045	0.34045	0.34045
4.10	-0.47938	0.092074	0.169835	-0.204930	0.077243	0.180664	-0.032350	0.11341	0.36830	0.36830	0.36830
4.50	-0.47557	0.098707	0.161905	-0.191780	0.084444	0.179394	-0.031177	0.12371	0.39483	0.39483	0.39483
4.90	-0.47149	0.105034	0.154477	-0.179772	0.091595	0.178169	-0.030101	0.13390	0.42013	0.42013	0.42013
5.30	-0.46717	0.111072	0.147510	-0.168779	0.098698	0.176985	-0.029113	0.14396	0.44429	0.44429	0.44429
5.70	-0.46261	0.116840	0.140963	-0.158693	0.105755	0.175839	-0.028206	0.15391	0.46736	0.46736	0.46736
6.10	-0.45782	0.122354	0.134803	-0.149420	0.112766	0.174727	-0.027372	0.16375	0.48942	0.48942	0.48942
6.50	-0.45282	0.127629	0.129000	-0.140874	0.119733	0.173648	-0.026605	0.17347	0.51052	0.51052	0.51052
6.90	-0.44762	0.132678	0.123524	-0.132985	0.126658	0.172598	-0.025898	0.18309	0.53071	0.53071	0.53071
7.30	-0.44221	0.137515	0.118353	-0.125688	0.133542	0.171575	-0.025248	0.19261	0.55006	0.55006	0.55006
7.70	-0.43662	0.142150	0.113462	-0.118926	0.140385	0.170578	-0.024648	0.20202	0.56860	0.56860	0.56860
8.10	-0.43084	0.146595	0.108832	-0.112649	0.147188	0.169603	-0.024096	0.21133	0.58638	0.58638	0.58638
8.50	-0.41877	0.154954	0.100282	-0.101380	0.160680	0.167716	-0.023117	0.22965	0.61982	0.61982	0.61982
9.70	-0.40607	0.162663	0.092572	-0.091582	0.174025	0.165900	-0.022285	0.24758	0.65065	0.65065	0.65065

TABLE XIV. - $T_e/T_w = 4.0$, $f_w = -0.5$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	u/u_e	pu/pe_e
1.050	-0.39276	0.159785	0.085596	-0.083013	0.187226	0.164147	0.021578	0.23515	0.67914	
1.130	-0.37891	0.176375	0.079262	-0.075483	0.200289	0.162445	0.020978	0.28235	0.70250	
1.210	-0.36456	0.182482	0.073495	-0.063834	0.213218	0.160738	0.020469	0.29921	0.72993	
1.290	-0.34973	0.188148	0.068229	-0.062937	0.226016	0.159168	0.020039	0.31572	0.75259	
1.370	-0.33446	0.193411	0.063408	-0.057686	0.238686	0.157580	0.019677	0.33190	0.77364	
1.450	-0.31879	0.198304	0.058984	-0.052993	0.251230	0.156018	0.019374	0.34776	0.79322	
1.530	-0.30274	0.202858	0.054916	-0.048784	0.263650	0.154479	0.019121	0.36331	0.81143	
1.610	-0.28634	0.207099	0.051167	-0.044997	0.275947	0.152957	0.018912	0.37854	0.82840	
1.690	-0.26962	0.211052	0.047707	-0.041579	0.288123	0.151452	0.018741	0.39348	0.84421	
1.770	-0.25258	0.214739	0.044506	-0.038486	0.300180	0.149958	0.018602	0.40812	0.85896	
1.850	-0.23526	0.218180	0.041541	-0.035680	0.312117	0.148474	0.018492	0.42247	0.87272	
1.930	-0.21768	0.221392	0.038790	-0.033127	0.323936	0.146999	0.018405	0.43654	0.88557	
2.010	-0.19985	0.224391	0.036235	-0.030799	0.335637	0.145529	0.018340	0.45033	0.89757	
2.090	-0.18178	0.227194	0.033857	-0.028871	0.347220	0.144064	0.018292	0.46385	0.90878	
2.170	-0.16350	0.229813	0.031643	-0.026723	0.358687	0.142602	0.018259	0.47711	0.91925	
2.330	-0.12634	0.234549	0.027649	-0.023293	0.381270	0.139683	0.018230	0.50283	0.93820	
2.490	-0.08848	0.238688	0.024161	-0.020384	0.403386	0.136767	0.018235	0.52754	0.95475	
2.650	-0.04999	0.242203	0.021104	-0.017902	0.425035	0.133847	0.018265	0.55127	0.96921	
2.810	-0.01097	0.245460	0.018414	-0.015770	0.446217	0.130921	0.018307	0.57405	0.98184	
2.970	0.02853	0.248213	0.016041	-0.013930	0.466929	0.127988	0.018355	0.59591	0.99285	
3.130	0.06844	0.250608	0.013943	-0.012335	0.487172	0.125048	0.018403	0.61688	1.00243	
3.290	0.10871	0.252688	0.012083	-0.010944	0.506944	0.122100	0.018446	0.63698	1.01075	
3.450	0.14929	0.254486	0.010432	-0.009727	0.526244	0.119145	0.018480	0.65625	1.01794	
3.610	0.19013	0.256036	0.008963	-0.008658	0.545071	0.116187	0.018501	0.67471	1.02414	
3.770	0.23121	0.257363	0.007654	-0.007715	0.563424	0.113226	0.018509	0.69236	1.02945	
3.930	0.27248	0.258493	0.006488	-0.006882	0.581303	0.110265	0.018501	0.70928	1.03397	
4.090	0.31392	0.259446	0.005447	-0.006142	0.598708	0.107306	0.018476	0.72544	1.03778	
4.250	0.35549	0.260242	0.004518	-0.005484	0.615641	0.104353	0.018433	0.74089	1.04097	
4.410	0.39719	0.260897	0.003688	-0.004897	0.632102	0.101409	0.018371	0.75564	1.04359	
4.570	0.43897	0.261427	0.002948	-0.004372	0.648092	0.098476	0.018407	0.83073	1.05047	
4.730	0.48084	0.261844	0.002286	-0.003901	0.663615	0.095557	0.018290	0.76971	1.04571	
5.050	0.56472	0.262391	0.001171	-0.003098	0.693266	0.089775	0.018190	0.78314	1.04738	
5.370	0.64873	0.262619	0.000288	-0.002445	0.721081	0.084087	0.017604	0.83073	1.05047	
5.690	0.73277	0.262595	0.000406	-0.001911	0.747094	0.078516	0.017205	0.85114	1.05038	
6.010	0.81677	0.262375	0.000946	-0.001472	0.771346	0.073082	0.016742	0.86952	1.04950	
6.330	0.90668	0.262004	0.001357	-0.001110	0.793884	0.067807	0.016220	0.88601	1.06680	

TABLE XIV.- $T_e/T_w = 4.0$, $f_w = -0.5$, $Eu = 1/3$ - Concluded

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	θ'''	u/u_e	pu/pe_e
6.650	• 98444	• 261518	• 0001603	-• 000810	• 0814761	• 062707	• 015647	• 90074	• 04607		
6.970	1.06804	• 260949	• 0001881	-• 000562	• 0834036	• 057798	• 015029	• 91287	• 04380		
7.290	1.15144	• 260322	• 0002027	-• 000357	• 0851773	• 053092	• 014373	• 92553	• 04129		
7.610	1.23464	• 259658	• 0002113	-• 000188	• 0868038	• 048602	• 013686	• 93584	• 03863		
7.930	1.31762	• 258975	• 0002150	-• 000049	• 0882902	• 044336	• 012976	• 94492	• 03590		
8.250	1.40038	• 258286	• 0002148	• 000063	• 0896438	• 040299	• 012249	• 95290	• 03315		
8.570	1.48293	• 257604	• 0002112	• 000154	• 0908719	• 036497	• 011513	• 95987	• 03042		
8.890	1.56525	• 256937	• 0002051	• 000225	• 0919821	• 032932	• 010773	• 96595	• 02775		
9.210	1.64737	• 256294	• 0001970	• 000280	• 0929820	• 029602	• 010036	• 97121	• 02517		
9.530	1.72928	• 255678	• 0001873	• 000321	• 0938792	• 026508	• 009308	• 97576	• 02271		
9.850	1.81101	• 255096	• 0001766	• 000350	• 0946810	• 023644	• 008593	• 97968	• 02038		
10.170	1.89255	• 254549	• 0001651	• 000368	• 0953948	• 021006	• 007897	• 98303	• 01820		
10.490	1.97392	• 254040	• 0001531	• 000377	• 0960277	• 018588	• 007223	• 98589	• 01616		
10.810	2.05514	• 253569	• 0001410	• 000379	• 0965867	• 016381	• 006577	• 98831	• 01428		
11.130	2.13621	• 253138	• 0001290	• 000374	• 0970782	• 014376	• 005959	• 99036	• 01255		
11.450	2.21715	• 252744	• 0001171	• 000364	• 0975088	• 012563	• 005374	• 99209	• 01098		
11.770	2.29797	• 252387	• 0001057	• 000350	• 0978842	• 010933	• 004823	• 99353	• 00955		
12.090	2.37868	• 252067	• 0000948	• 000332	• 0982103	• 009473	• 004307	• 99473	• 00827		
12.730	2.53983	• 251526	• 0000748	• 000291	• 0987348	• 007019	• 003885	• 99656	• 00610		
13.370	2.70066	• 251103	• 0000576	• 000246	• 0991202	• 005109	• 002607	• 99779	• 00441		
14.010	2.86126	• 250782	• 0000433	• 000201	• 0993984	• 003653	• 001968	• 99860	• 00313		
14.650	3.02168	• 250543	• 0000318	• 000159	• 0995956	• 002564	• 001455	• 99913	• 00217		
15.290	3.18197	• 250370	• 0000228	• 000123	• 0997328	• 001767	• 001054	• 99947	• 00148		
15.930	3.34216	• 250247	• 0000160	• 000092	• 0998265	• 001195	• 000748	• 99968	• 00099		
16.570	3.50229	• 250161	• 0000110	• 000067	• 0998893	• 000793	• 000520	• 99982	• 00065		
17.210	3.66238	• 250103	• 0000074	• 000047	• 0999307	• 000516	• 000354	• 99989	• 00041		
17.850	3.82243	• 250065	• 0000048	• 000033	• 0999574	• 000330	• 000236	• 99994	• 00026		
18.490	3.98246	• 250040	• 000031	• 000022	• 0999743	• 000207	• 000154	• 99997	• 00016		
19.130	4.14248	• 250024	• 000019	• 000014	• 0999848	• 000127	• 000098	• 99998	• 00010		
19.770	4.30249	• 250014	• 000012	• 000009	• 0999912	• 000076	• 000061	• 99999	• 00006		
20.410	4.46250	• 250008	• 000007	• 000006	• 0999950	• 000045	• 000036	• 1.00000	• 00003		
21.050	4.62251	• 250005	• 000004	• 000004	• 0999973	• 000026	• 000023	• 1.00000	• 00002		
21.690	4.78251	• 250003	• 000002	• 000002	• 0999985	• 000015	• 000013	• 1.00000	• 00001		
22.330	4.94251	• 250001	• 000001	• 000001	• 0999993	• 000008	• 000008	• 1.00000	• 00001		

TABLE XV.- $T_e/T_w = 4.0$, $f_w = -1.0$, $E_u = 1/3$

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η	f	f'	f''	f'''	θ	θ'	θ''	u/u_e	$\rho u/c_{ue}$
0.00	1.00000	0.00000	0.161451	-0.075616	0.00000	0.076403	0.020769	0.00000	0.00000
0.05	1.00000	0.000806	0.161073	-0.075535	0.000382	0.076507	0.020767	0.00081	0.00323
0.10	-0.99999	0.001611	0.160695	-0.075455	0.000765	0.076611	0.020765	0.00161	0.00644
0.15	-0.99998	0.002413	0.160319	-0.075374	0.001148	0.076714	0.020763	0.00242	0.00965
0.20	-0.99997	0.003214	0.159942	-0.075293	0.001532	0.076818	0.020760	0.00323	0.01286
0.25	-0.99995	0.004013	0.159566	-0.075211	0.001917	0.076922	0.020757	0.00404	0.01605
0.30	-0.99993	0.004810	0.159190	-0.075129	0.002301	0.077026	0.020755	0.00484	0.01924
0.40	-0.99987	0.006398	0.158439	-0.074864	0.003073	0.077233	0.020748	0.00646	0.02559
0.50	-0.99980	0.007978	0.157691	-0.074798	0.003846	0.077441	0.020741	0.00807	0.03191
0.60	-0.99971	0.009552	0.156943	-0.074630	0.004622	0.077648	0.020733	0.00968	0.03821
0.70	-0.99961	0.011117	0.156198	-0.074461	0.005399	0.077856	0.020725	0.01130	0.04447
0.80	-0.99949	0.012675	0.155454	-0.074290	0.006179	0.078063	0.020716	0.01291	0.05070
0.90	-0.99936	0.014226	0.154712	-0.074118	0.006960	0.078270	0.020706	0.01452	0.05691
1.10	-0.99904	0.017306	0.153233	-0.073770	0.008530	0.078684	0.020684	0.01775	0.06922
1.30	-0.99866	0.020356	0.151761	-0.073417	0.010108	0.079097	0.020659	0.02097	0.08142
1.50	-0.99823	0.023376	0.150297	-0.073059	0.011694	0.079510	0.020631	0.02420	0.09351
1.70	-0.99773	0.026368	0.148839	-0.072696	0.013288	0.079922	0.020601	0.02742	0.10547
1.90	-0.99717	0.029330	0.147389	-0.072327	0.014891	0.080334	0.020567	0.03064	0.11732
2.10	-0.99656	0.032263	0.145946	-0.071954	0.016501	0.080745	0.020531	0.03386	0.12905
2.50	-0.99515	0.038044	0.143083	-0.071194	0.019748	0.081565	0.020451	0.04030	0.15217
2.90	-0.99351	0.043710	0.140251	-0.070415	0.023027	0.082381	0.020360	0.04673	0.17484
3.30	-0.99165	0.049264	0.137450	-0.069620	0.026338	0.083193	0.020258	0.05316	0.19706
3.70	-0.98957	0.054707	0.134681	-0.068808	0.029682	0.084002	0.020146	0.05958	0.21883
4.10	-0.98728	0.060039	0.131945	-0.067982	0.033058	0.084805	0.020024	0.06599	0.24016
4.50	-0.98477	0.065263	0.129243	-0.067142	0.036466	0.085603	0.019891	0.07240	0.26105
5.30	-0.97914	0.075389	0.123940	-0.065423	0.043378	0.087183	0.019596	0.08520	0.30156
6.10	-0.97272	0.085097	0.118776	-0.063662	0.050415	0.088738	0.019264	0.09797	0.34039
6.90	-0.96554	0.094397	0.113755	-0.061865	0.057575	0.090264	0.018896	0.11070	0.37759
7.70	-0.95763	0.103302	0.108879	-0.060042	0.064856	0.091760	0.018493	0.12340	0.41321
8.50	-0.94902	0.111822	0.104149	-0.058201	0.072256	0.093222	0.018059	0.13606	0.44729
9.30	-0.93975	0.119969	0.099567	-0.056349	0.079771	0.094649	0.017595	0.14866	0.47988
1.090	-0.91931	0.135195	0.090848	-0.052642	0.095136	0.097384	0.016585	0.17378	0.5076
1.250	-0.89656	0.149072	0.082719	-0.048974	0.110925	0.09951	0.015482	0.19868	0.59629
1.410	-0.87168	0.161696	0.075172	-0.045390	0.127110	0.102335	0.014302	0.22336	0.64678
1.570	-0.84488	0.173157	0.068188	-0.041927	0.143662	0.104525	0.013062	0.24779	0.69263
1.730	-0.81633	0.183545	0.061747	-0.038613	0.160547	0.106512	0.011777	0.27195	0.73418

TABLE XV. - $T_e/T_w = 4.0$, $f_w = -1.0$, $E_u = 1/3$ - Continued

η	f	f'	f''	f'''	$f^{(4)}$	θ	θ'	θ''	θ'''	u/u_e	u/u_e
1.0890	-78619	192944	055823	-035468	177735	108292	010462	29582	77177		
2.0050	-75463	201434	050388	-032505	195189	109859	009130	31939	80574		
2.0210	-72178	209092	045411	-029730	212878	111213	007793	34263	83637		
2.0370	-68776	215989	040864	-027147	230766	112353	006461	36552	86395		
2.0530	-65270	222190	036714	-024753	248620	113281	005144	38805	88876		
2.0690	-61670	227757	032933	-022543	267005	114000	003850	41019	91103		
2.0850	-57985	232746	029491	-020511	285289	114515	002585	43195	93099		
3.0010	-54225	237211	026361	-018646	303639	114830	001356	45329	94884		
3.0170	-50397	241197	023516	-016940	322024	114951	000166	47421	96479		
3.0330	-46509	244750	020932	-015381	340414	114885	-000980	49470	97900		
3.0490	-42567	247908	018586	-013960	358778	114639	-002080	51474	99163		
3.0650	-38577	250709	016458	-012646	377089	114222	-003131	53433	100284		
3.0810	-34546	253185	014527	-011488	395320	113640	-004131	55345	101274		
3.0970	-30477	255367	012776	-010418	413446	112903	-005080	57211	102147		
4.0130	-26376	257282	011188	-009445	431441	112018	-005976	59029	102913		
4.0290	-22245	258955	009749	-008560	449284	110993	-006820	60799	103582		
4.0450	-18090	260409	008445	-007751	466952	109838	-007612	62520	104164		
4.0610	-13913	261664	007263	-007027	484422	108560	-008352	64193	104666		
4.0770	-09718	262739	006192	-006364	501685	107168	-009040	65818	105096		
4.0930	-05506	263651	005223	-005760	518714	105670	-009678	67393	105460		
5.0250	02954	265046	003553	-004713	552012	102388	-010805	70397	106019		
5.0570	11451	265957	002188	-003844	584206	098775	-011744	73208	106383		
5.0890	19971	266474	001077	-003122	615199	094890	-012504	75828	106589		
6.0210	28502	266669	000177	-002520	644913	090790	-013096	78261	106668		
6.0530	37035	266606	-000546	-002016	673287	086526	-013532	80511	106643		
6.0850	45563	266336	-001122	-001594	700277	082145	-013825	82586	106534		
7.0170	54079	265902	-001574	-001240	725852	077692	-013986	84492	106361		
7.0490	62579	265340	-001921	-000941	749996	073207	-014026	86235	106136		
7.0810	71060	264682	-002181	-000690	772705	068727	-013957	87824	105873		
8.0130	79518	263952	-002367	-000477	793986	064285	-013790	89268	105581		
8.0450	87952	263174	-002490	-000298	813655	059911	-013536	90573	105269		
8.0770	96361	262364	-002561	-000148	832338	055630	-013206	91749	104946		
9.090	1.04743	261539	-002588	-000022	849470	051466	-012809	92805	104616		
9.410	1.13099	260712	-002577	-000083	865291	047439	-012355	93749	104285		
9.730	1.21429	259893	-002537	-000167	879847	043564	-011853	94589	103957		
10.050	1.29733	259091	-002471	-000239	893190	039857	-011313	95335	103637		

TABLE XV.- $T_e/T_w = 4.0$, $f_w = -1.0$, $E_u = 1/3$ - Concluded

η	f	f'	f''	f'''	f''''	θ	θ'	θ''	u/u_e	$\rho u/\rho e u_e$
10.370	1.38011	0.258314	-0.002385	0.000295	0.905374	0.036327	-0.010743	0.95993	0.95993	1.03326
10.690	1.46265	0.257567	-0.002283	0.000339	0.916459	0.032983	-0.010151	0.96571	1.03027	
11.010	1.54496	0.256854	-0.002169	0.000372	0.926504	0.029832	-0.009544	0.97078	1.02742	
11.330	1.62704	0.256180	-0.002046	0.000395	0.935572	0.026876	-0.008929	0.97520	1.02472	
11.650	1.70892	0.255545	-0.001917	0.000410	0.943726	0.024117	-0.008313	0.97904	1.02218	
11.970	1.79059	0.254953	-0.001785	0.000417	0.951028	0.021555	-0.007702	0.98235	1.01981	
12.290	1.87209	0.254403	-0.001651	0.000417	0.957542	0.019187	-0.007101	0.98521	1.01761	
12.610	1.95342	0.253896	-0.001518	0.000412	0.963328	0.017009	-0.006515	0.98765	1.01558	
12.930	2.03459	0.253431	-0.001388	0.000402	0.968447	0.015015	-0.005948	0.98974	1.01372	
13.250	2.11562	0.253007	-0.001261	0.000389	0.972957	0.013199	-0.005404	0.99150	1.01203	
13.570	2.19652	0.252624	-0.001139	0.000372	0.976913	0.011554	-0.004885	0.99300	1.01049	
13.890	2.27730	0.252278	-0.001023	0.000352	0.980368	0.010070	-0.004394	0.99425	1.00911	
14.210	2.35798	0.251968	-0.000914	0.000331	0.983374	0.008738	-0.003933	0.99530	1.00787	
14.050	2.51906	0.251467	-0.000717	0.000285	0.988219	0.006494	-0.003103	0.99690	1.00579	
15.490	2.67986	0.251044	-0.000550	0.000238	0.991790	0.004740	-0.002399	0.99779	1.00418	
16.130	2.84042	0.250738	-0.000412	0.000193	0.994374	0.003398	-0.001817	0.99872	1.00295	
16.770	3.00082	0.250511	-0.000302	0.000152	0.996210	0.002391	-0.001348	0.99919	1.00204	
17.410	3.16109	0.250346	-0.000217	0.000116	0.997492	0.001652	-0.000979	0.99950	1.00136	
18.050	3.32127	0.250229	-0.000152	0.000087	0.998369	0.001120	-0.000697	0.99969	1.00092	
18.690	3.48139	0.250148	-0.000104	0.000063	0.998959	0.000745	-0.000486	0.99981	1.00059	
19.330	3.64146	0.250093	-0.000070	0.000045	0.999348	0.000486	-0.000331	0.99988	1.00037	
19.970	3.80151	0.250056	-0.000046	0.000031	0.999600	0.000311	-0.000221	0.99992	1.00022	
20.610	3.96154	0.250032	-0.000030	0.000021	0.999760	0.000196	-0.000145	0.99995	1.00013	
21.250	4.12155	0.250017	-0.000019	0.000014	0.999860	0.000121	-0.000093	0.99996	1.00007	
21.890	4.28156	0.250007	-0.000012	0.000009	0.999921	0.000073	-0.000058	0.99997	1.00003	
22.530	4.44156	0.250001	-0.000007	0.000006	0.999957	0.000043	-0.000036	0.99997	1.00000	
23.170	4.60156	0.249997	-0.000004	0.000003	0.999978	0.000025	-0.000022	0.99997	0.99999	
23.810	4.76156	0.249995	-0.000003	0.000002	0.999991	0.000014	-0.000013	0.99997	0.99998	
24.450	4.92156	0.249994	-0.000002	0.000001	0.999998	0.000008	-0.000007	0.99997	0.99997	

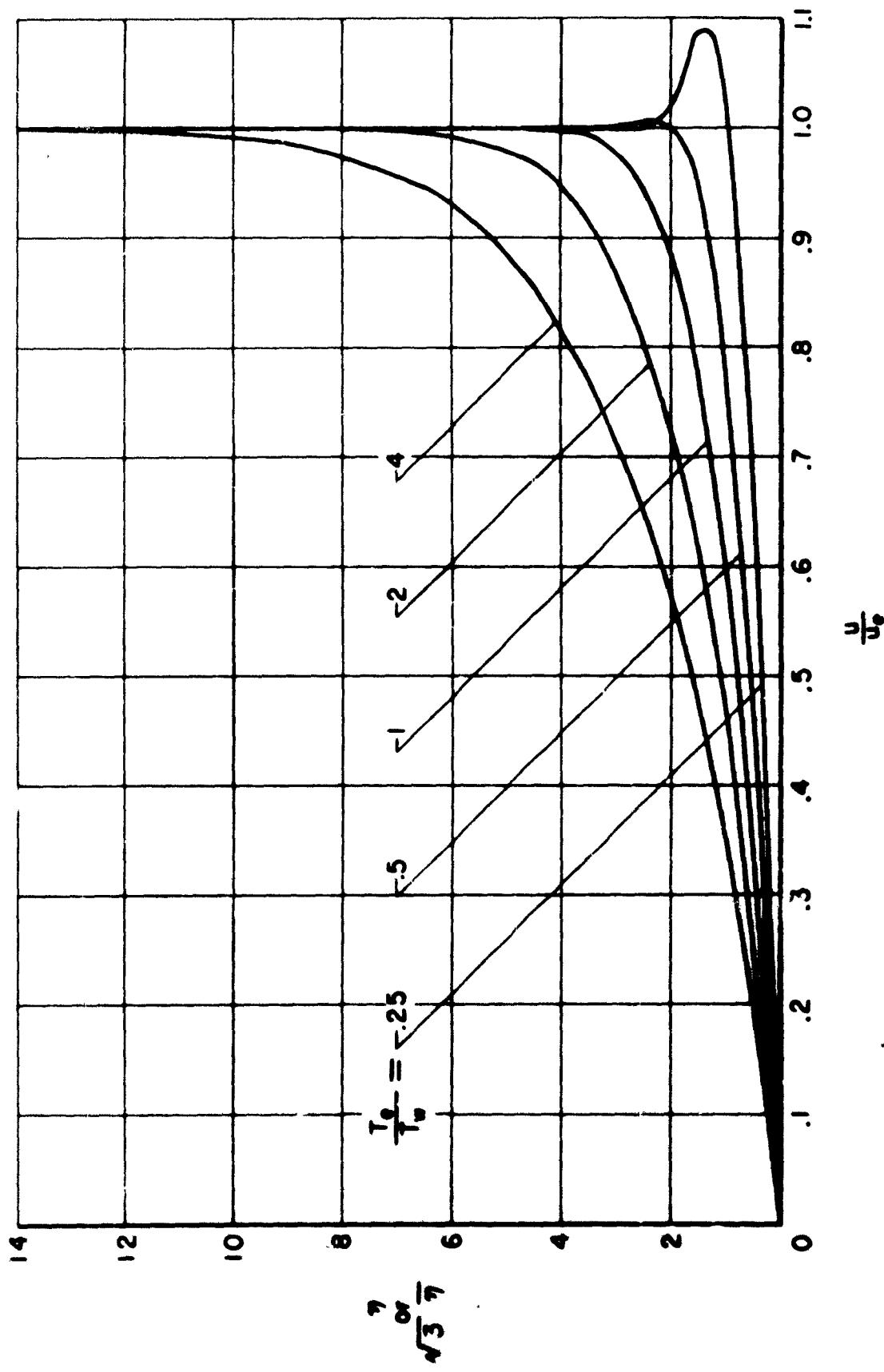


Figure 1.- Velocity profiles for $f_W = 0$.

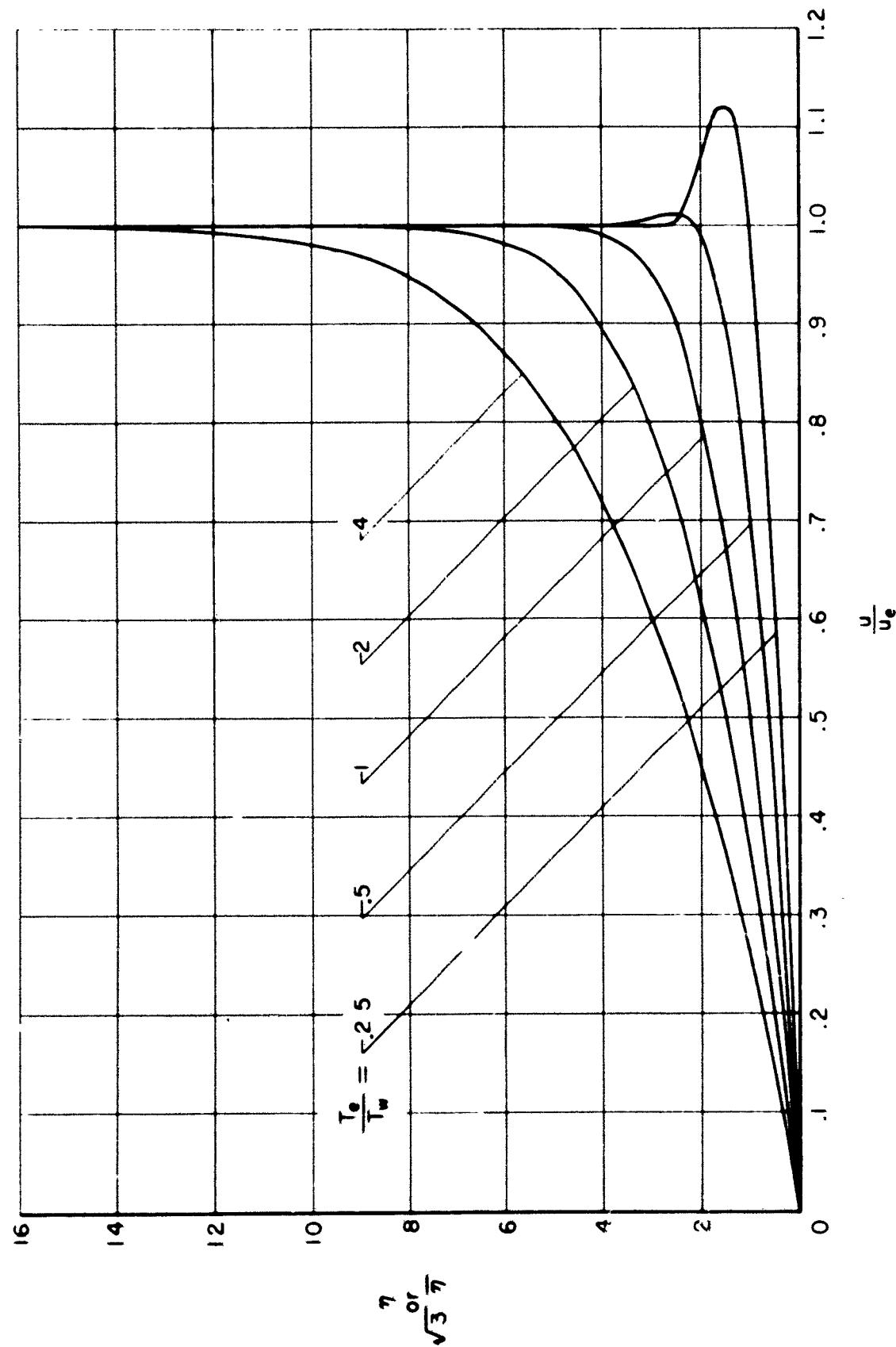


Figure 2. Velocity profiles for $f_w = -0.5$

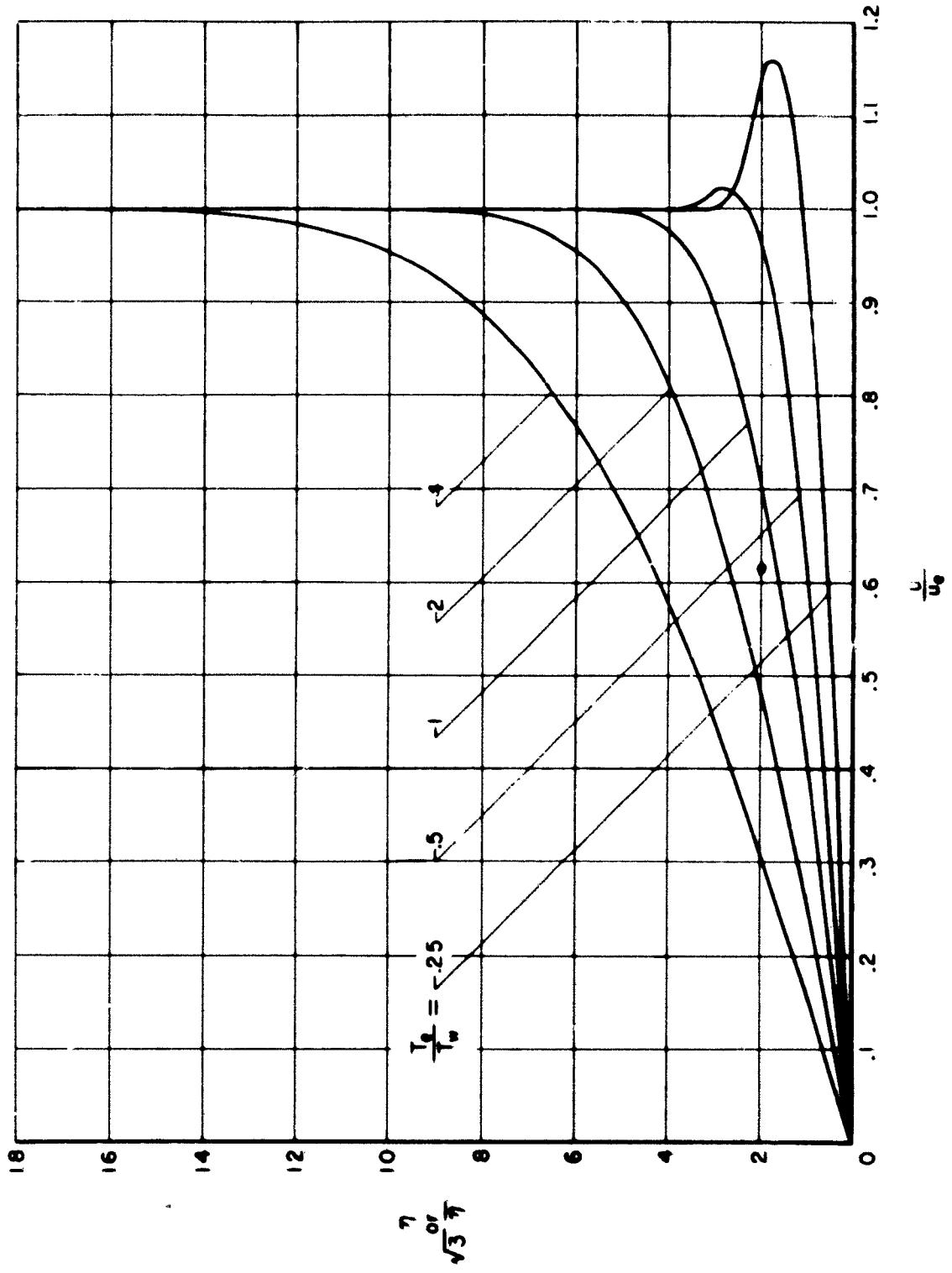


Figure 3.- Velocity profiles for $f_w = -1.0$.

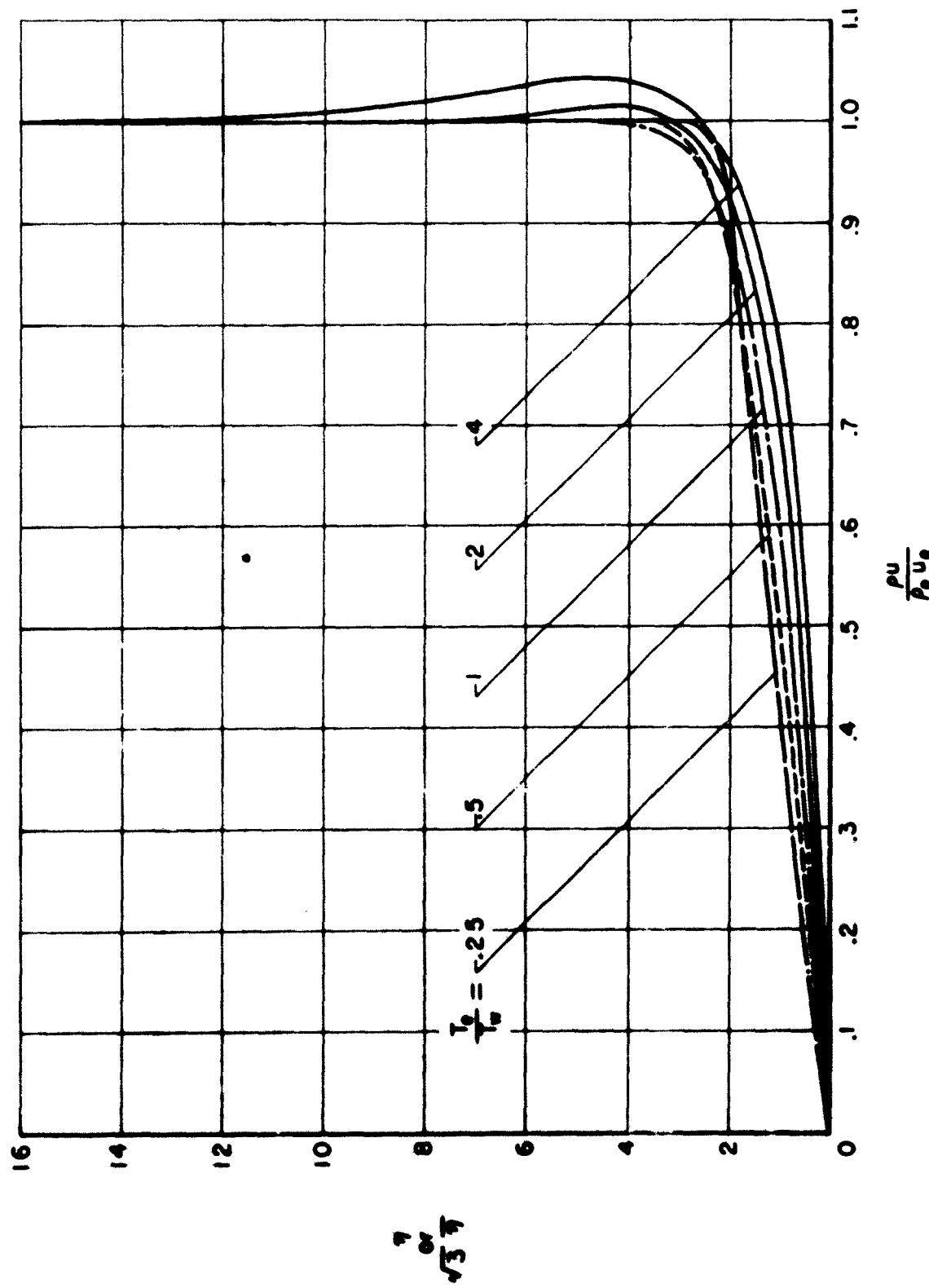


Figure 4.- Mass-flow profiles for $f_w = 0$.

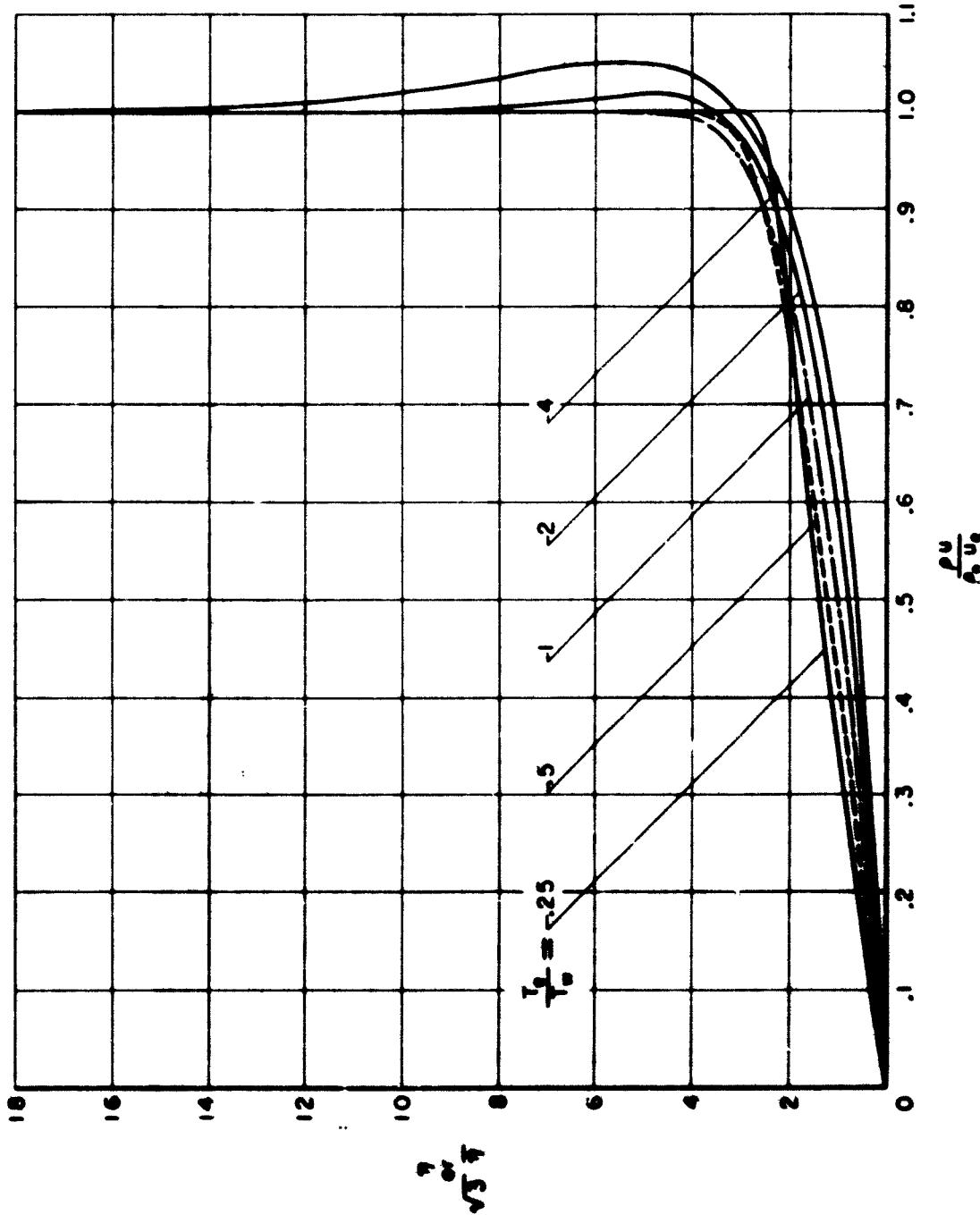


Figure 5.0 Mass-flow profiles for $f_W = -0.5$.

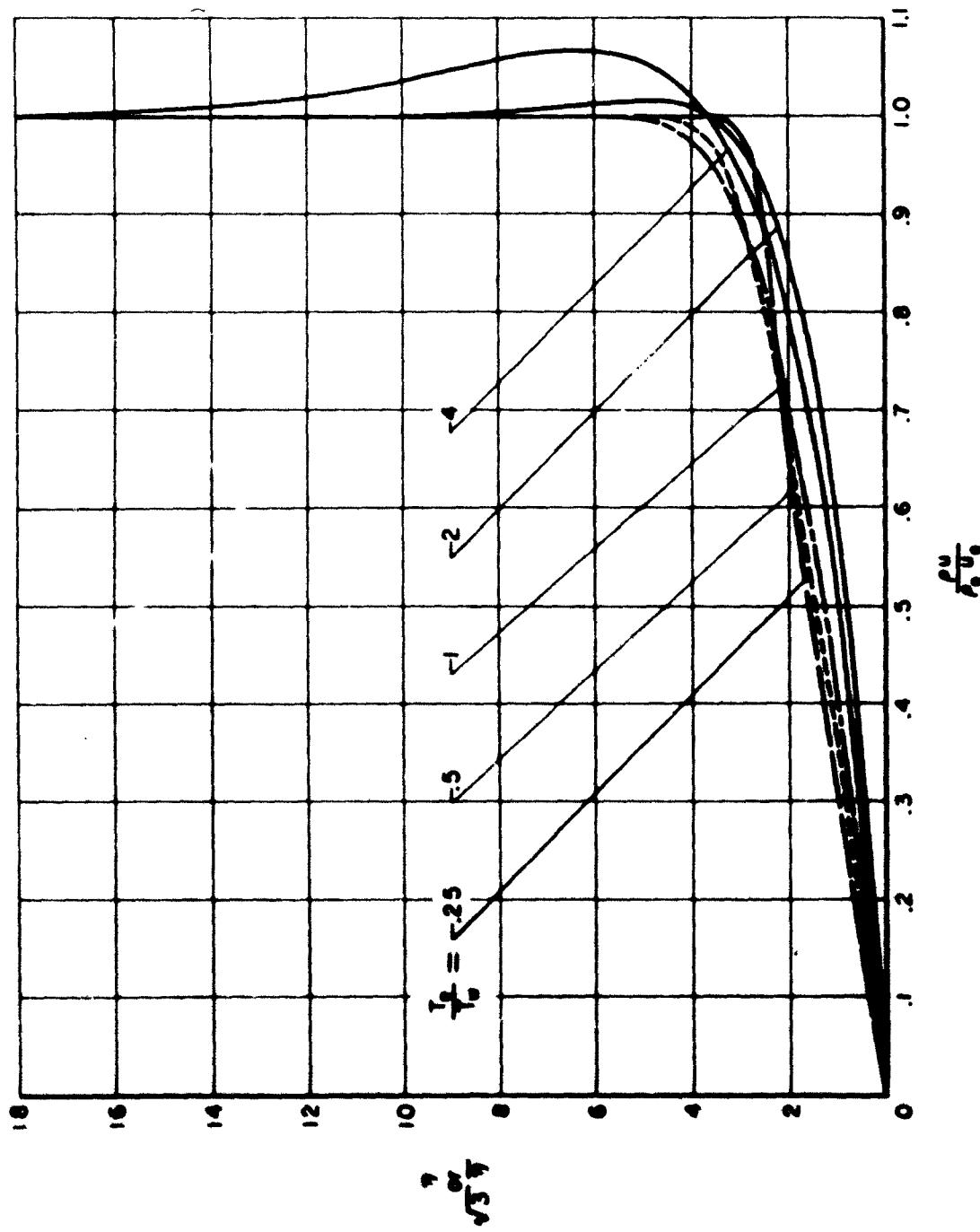


Figure 6.- Mass-flow profiles for $f_w = -1.0$.

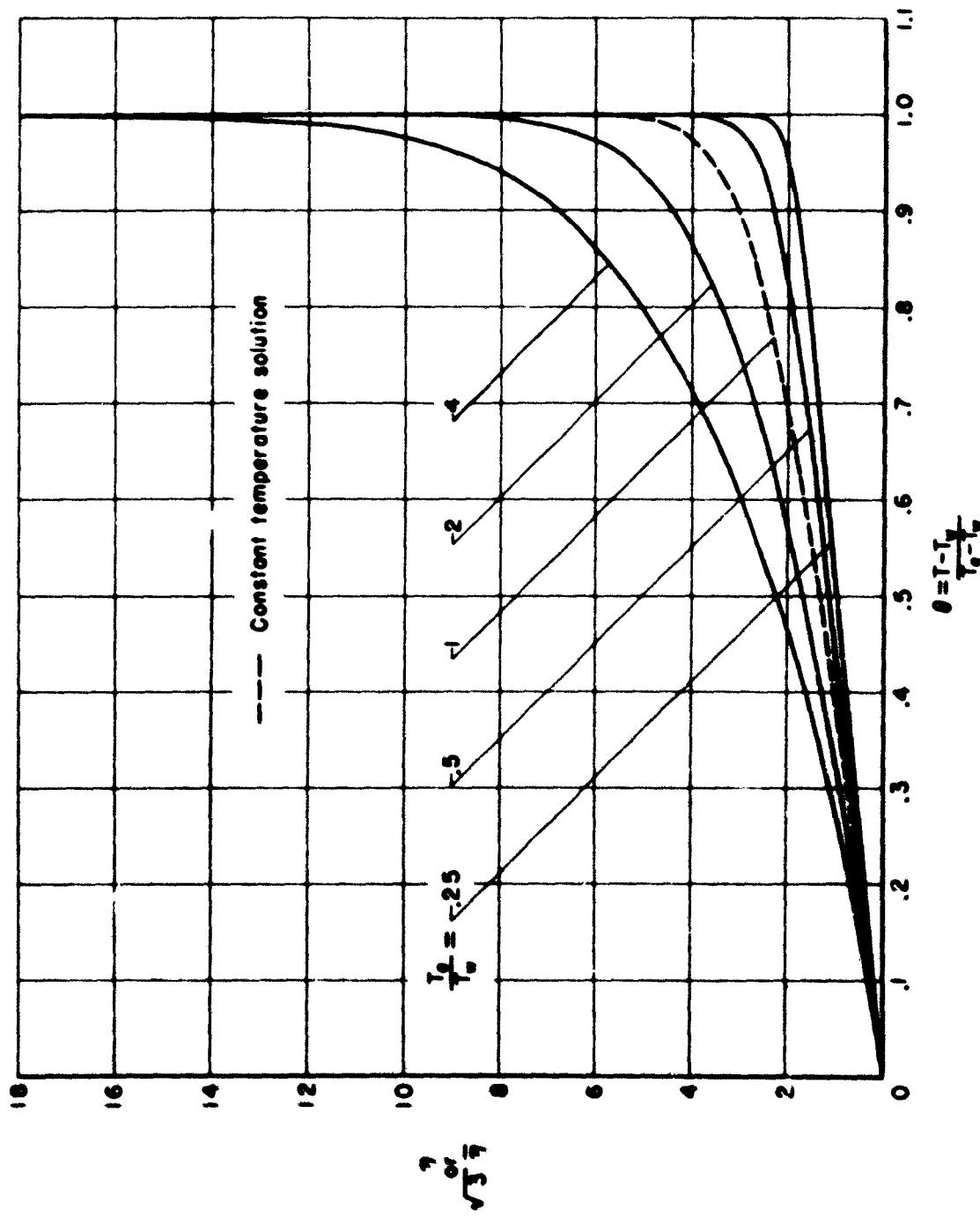


Figure 7.- Temperature profiles for $f_w = 0$.

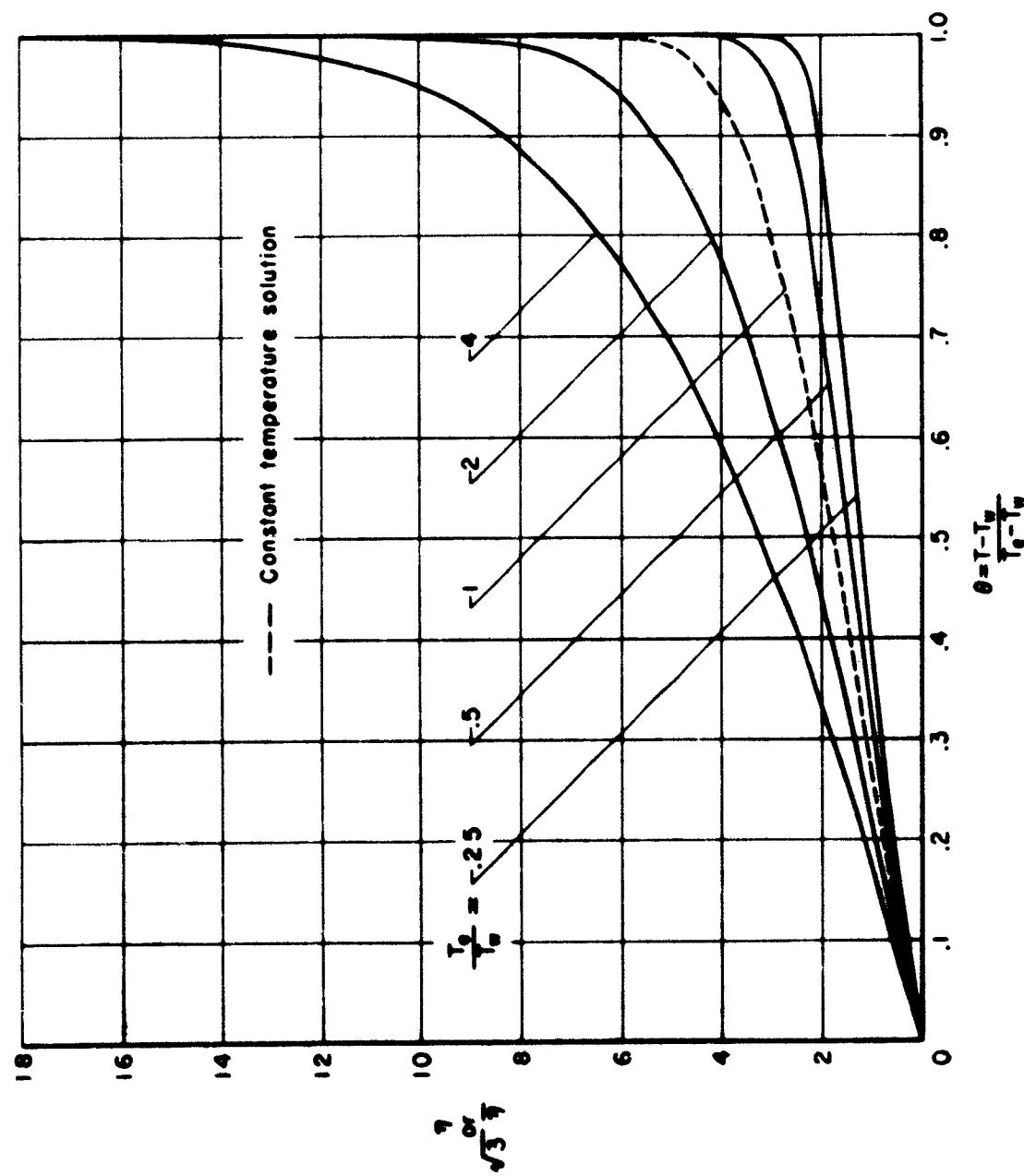


Figure 8.— Temperature profiles for $f_w = -0.5$.

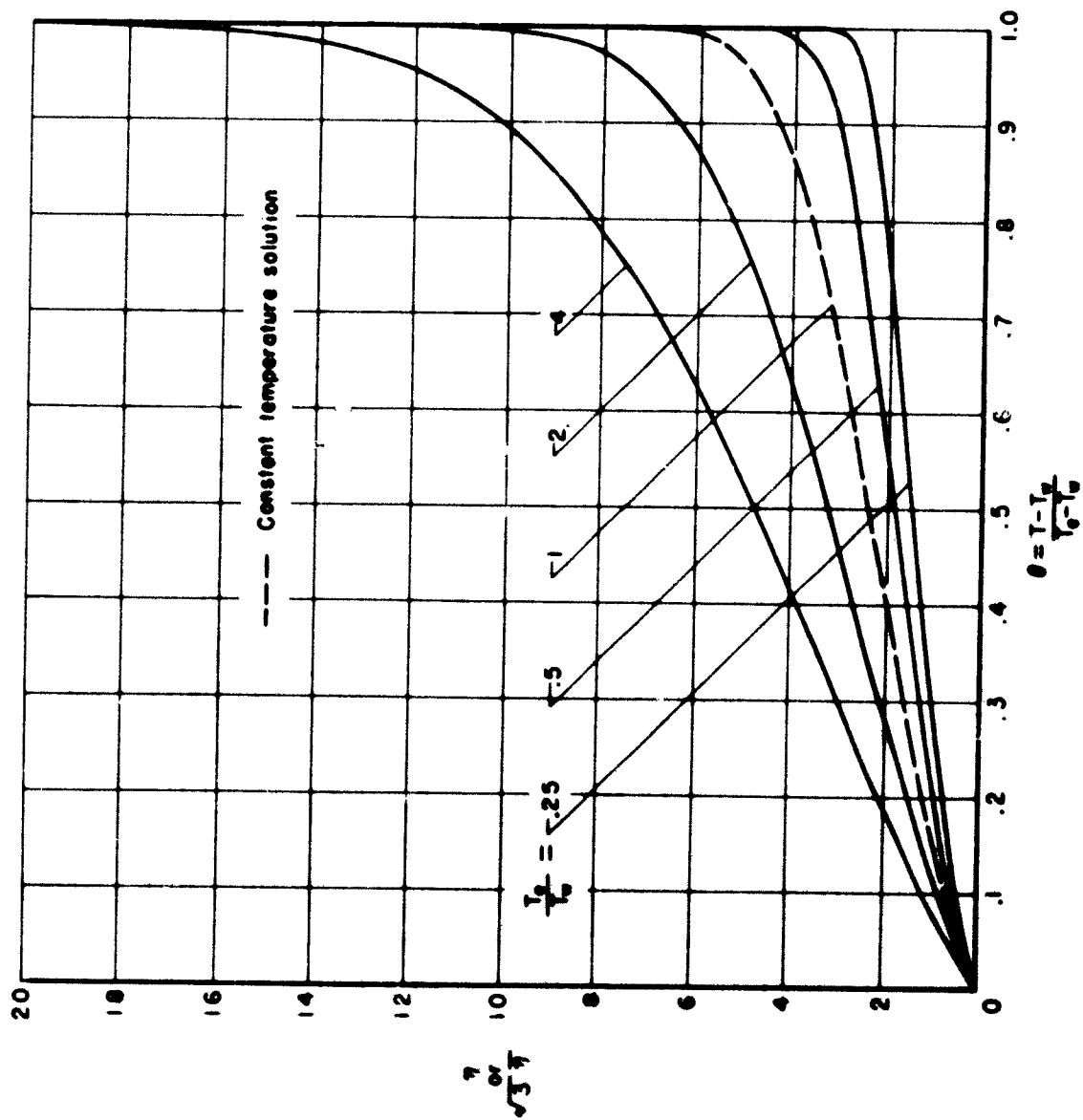


Figure 9.0. Temperature profiles for $f_w = -1.0$.

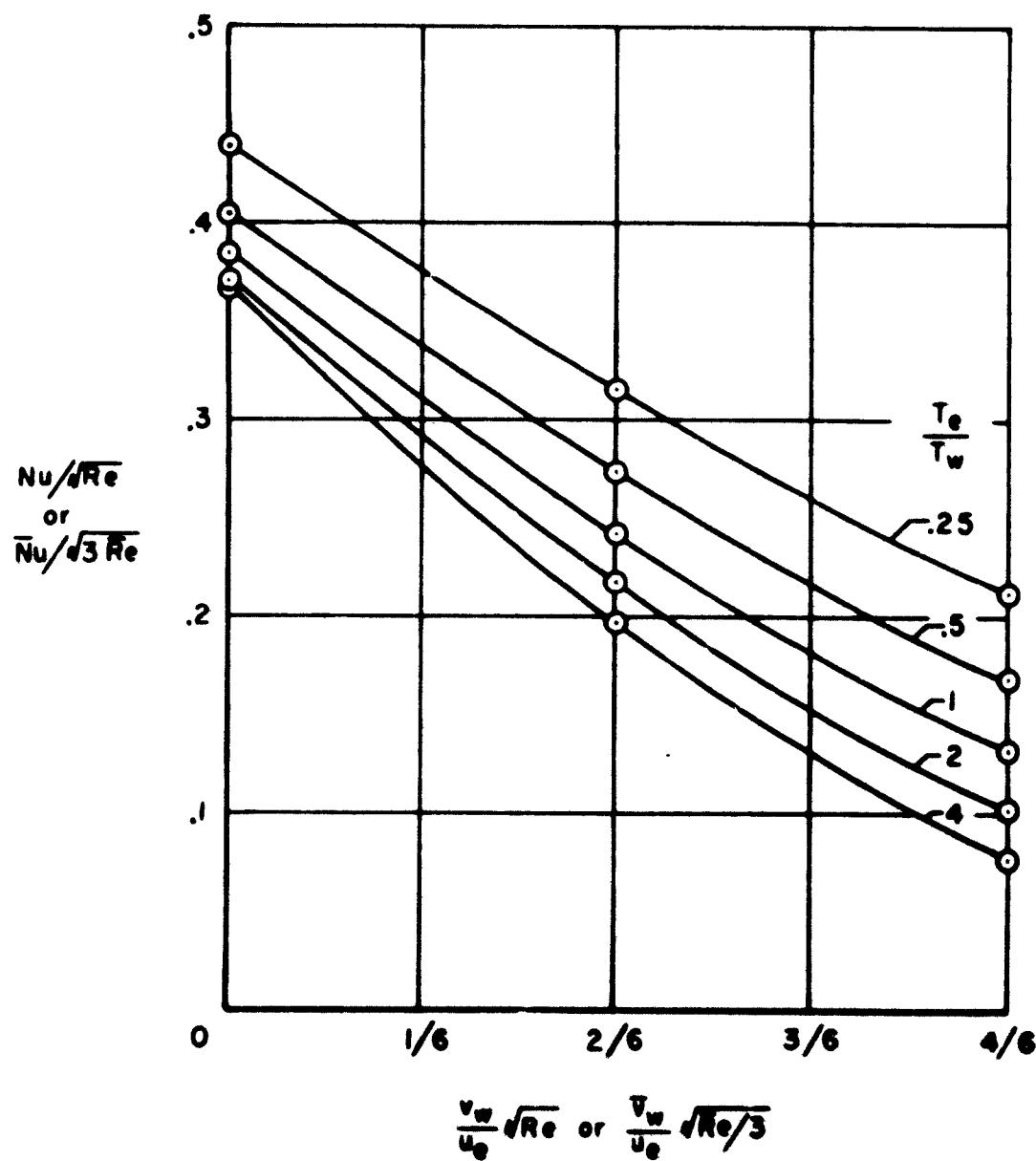


Figure 10.- The influence of transpiration and wall temperature level on the heat-transfer parameter.

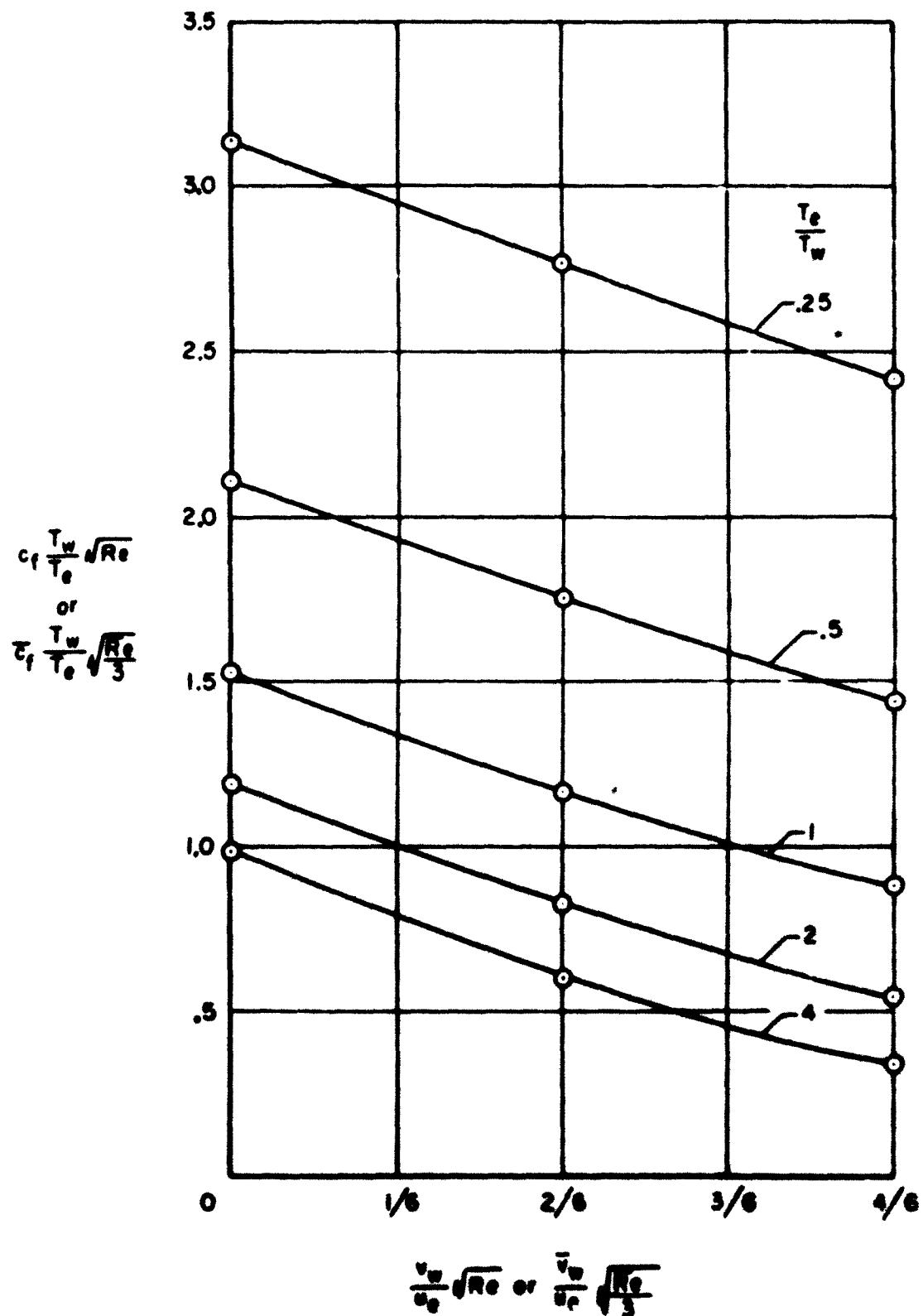


Figure 11.- The influence of transpiration and wall temperature level on the skin-friction parameter.